THE UNIVERSITY OF WINCHESTER

Faculty of Humanities and Social Sciences

Human Uniqueness: Twenty-First Century Perspectives from Theology, Science and Archaeology

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ABSTRACT FOR THESIS

Human Uniqueness: Twenty-First Century Perspectives from Theology, Science and Archaeology

A project aiming to establish, through the three disciplines, the value of human uniqueness as an integrating factor for science with theology

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The theme that underlies the thesis is the challenge presented by science, as it developed from the time of the Enlightenment through the centuries until the present day, to Christian theology. The consequent conflict of ideas is traced in respect of biological science and the traditions of Protestant Christian doctrine, together with the advances of the developing discipline of prehistoric archaeology since the early nineteenth century. The common ground from which disagreement stemmed was the existence of human beings and the uniqueness of the human species as a group amongst all other creatures. With the conflict arising from this challenge, centring on the origin and history of human uniqueness, a rift became established between the disciplines which widened as they progressed through to the twentieth century. It is this separation that the thesis takes up and endeavours to analyse in the light of the influence of advancing science on the blending of philosophical scientific ideas with the elements of Christian faith of former centuries. A shift in outlook, sparked off by the presentation by certain theologian-scientists of the concept of healing this rift by way of dialogue, is pin-pointed as a move away from conflict and towards compatibility. The possibility of so doing is considered in depth and extended, by the thesis, to something more than forms of agreement and towards the achieving of integration between theology and science by way of the agency of human uniqueness. This endeavour, requiring a new approach to the conflicting issues, is presented by means of two studies, one scientific and one theological, considered separately but in parallel, of a human issue of relevance to each, in the twenty-first century – that of human individuality. With the outcome of this presentation being found to be agreement amounting to no more than compatibility, the thesis proceeds to find a means of furthering the way towards integration. Disciplines having a close association with the scientific view of the individual human being and the theological concept of human individuality, are brought into the enquiry – archaeology to assist science and philosophy to aid theology, the common ground being specified as the uniqueness of the human individual. A narrative style, maintained throughout, is based on 'key figures' whose work illuminates the issues discussed and is designed to emphasise the central role of the human individual. The thesis is presented as an original contribution to the science versus theology debate, by virtue of its centring not on conflicting issues but on those of common interest. To this end, the employment of associated disciplines, archaeology in particular, has opened up an approach not previously explored. In its conclusion, the thesis makes a claim for the means suggested for integrating science with theology through the concept of human uniqueness, to be recognised as plausible and worthy of being considered in other fields of confrontation between the two disciplines.

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No portion of the work referred to in the Thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

I confirm that this Thesis is entirely my own work.

INTRODUCTION

The theme that underlies the thesis is one which arose with the emergence of scientific ideas from seventeenth century philosophical trends towards rationality, which accompanied the Enlightenment – the challenge presented by science to the traditions of Christian theology and the conflict it predicted. Through the subsequent centuries as science advanced as a discipline, a split with theology became apparent, the challenge from biological science being particularly felt in respect of Christian doctrine, the threads of common interest of former times disintegrating. Relating aspects of biology to the human condition gave grounds for conflict which centred on the uniqueness of human beings amongst all other living creatures by virtue of 'origin' – the contention being about the manner in which the uniqueness had come about. For theology, 'origins' were part of the Divine purpose and the uniqueness of humanity was a gift of God. The origin of species was, for biology by way of evolution, human uniqueness emerging through neural advancement, this view being supported by the progress of nineteenth century prehistoric aspects of archaeology. A late twentieth century shift towards some form of reunion of the disciplines through the serious and scholarly work of certain theologian-scientists gave hope for a reduction of conflicting ideas in the twenty-first century by establishing a measure of *compatibility,* though any suggestion of integration was only tentative. The thesis is designed to take up this apparent reluctance as a challenge, endeavouring to present human uniqueness, not as a source of conflict, but as an agent of integration.

Using a narrative style in order to bring out the central theme of humans as individuals, the case for the integration of the disciplines of science and theology is presented through the means provided by propositions put forward by selected writers, whose concern has been the relationship between science and theology, viewed from the background of the agreement and opposition that their ideas aroused. This background is traced, historically, through the trends of thought emerging from the philosophical science of the English Enlightenment, through the stages of scientific advancement to the twentieth century separation of science and theology, together with the influence of the developing discipline of archaeology. These trends, reflecting both compatibility and conflict arising between the disciplines, are represented as Moderate and Extreme views, both scientific and theological, and are analysed on the basis of the varying interpretations of the concept of human uniqueness. The issues of disagreement apparent in late twentieth and early

twenty-first centuries, when associated with new knowledge from prehistoric archaeology, necessitated the clarification of the concept of the uniqueness of human beings as not only a species but as individuals. To this end, two twenty-first century publications, one scientific and one theological, are considered in depth and discussed with a wider field of contemporary opinion, each bringing out a twenty-first century concept of the individuality of the human being. What is not covered, in either study, is the question of uniqueness regarding the individual. For this, a similar study is presented through disciplines associated with science and theology - cognitive archaeology and philosophical theology - a recent publication of each being considered and discussed. It is here that the question of integration is tackled as a step further than interaction. Using the evidence from the associated disciplines on behalf of the principal disciplines of science and theology, on the common ground of their shared human experience, a view of aspects, where each could supplement the knowledge and understanding of the other, is presented as a means through which integration could be achieved.

The main issues discussed in the thesis – science and theology, human uniqueness and integration – are defined by the boundaries imposed by their context. For science – here biology, particularly that which applies to the human species – the basis is the establishment of factual evidence to support relevant hypotheses through observation, compiling data and engaging in appropriate investigation. For aspects relating to human activity beyond this remit, prehistoric archaeology, where there is an association with science and is relevant to the scientific issue, is a valuable supplement. For theology – here that of Protestant Christianity – the traditional status of humanity, originating and existing for a Divine purpose and destiny is maintained, human faith being reflected upon and brought to a level of theological expression. For human issues centring on 'the self', philosophical theology extends this remit through philosophy, where there is detachment from tradition and engagement in a more individual investigation (Macquarrie 1974, pp1-2). The essence of uniqueness, that of 'having no equal', refers, in the context of the thesis, both to humans as a group – the human species – and to humans as individuals. In the former the shared features distinguish humans from all other creatures through observed differences, whilst the latter are differentiated by their sharing of the fact that they are different from one another. Integration, seen as more than the maintenance of dialogue, is viewed as a response to the need, by contemporary society, for a sharing, by each, of the advancing knowledge, with its interpretation, of the other. The historical background

shows how prejudice, stemming from ignorance, impeded the advancement of the Protestant Church's ministry. Present day antagonism between supporters of the views of biologist Dawkins and those holding to their Christian beliefs, exhibiting a similar prejudice through ignorance about the theology they contend with, promoting unscientific notions of meaning and purpose about the natural world. On the common ground of human uniqueness, the contributing of knowledge and understanding, as a necessity for the advancement of each, the thesis puts forward a means of bonding the disciplines together, through integration. It is on these concepts that the methodology employed, throughout the thesis, is based.

With the human individual as the hub of the discussions throughout the thesis, the use of the narrative style centring on the work of 'key figures' is employed, in the first place, for the purpose of emphasising the significance of solitary workers of the seventeenth and eighteenth centuries in opening up new fields of study and debate in particular situations. With the furthering of scientific specialisation throughout the next two centuries the style has the particular value of bringing out 'sides' of opinion, the work of individual figures 'representing' the interpretation expressed by a wider community. The Conclusion of the thesis has taken to task individuals whose vision of the future of the science - versus - theology debate, could well, it is claimed, be illuminated by a consideration of the role of *unique human individuals* in drawing together the ever widening rift between the disciplines, by way of *integration*.

The thesis is presented as an original contribution to the science versus theology debate, through its opening up of an approach centred not on areas of conflict, but on agreed issues of common interest, this being achieved by way of other disciplines associated with science and theology, particularly archaeology, not previously explored.

The thesis, set out in twelve chapters, traces, in the first four, the challenges that the advancement of science and the development of archaeology presented to theology from the seventeenth to the twentieth century. Human individuality is considered in the fifth chapter and its relation to selected twenty-first century theological and scientific concepts, in the following three chapters. The value of the associated disciplines of philosophical theology and cognitive archaeology are enquired into through the ninth and tenth chapters, the relevance of this to the question of integration occupying chapter eleven. A

conclusion, together with an evaluation of the thesis, in regard to other twenty-first century views in relation to science and theology, is put forward in the final chapter.

METHODOLOGY

The thesis has as its foundation three key issues – the integration of theology with science, humanity and human uniqueness: it is these issues that give shape to the themes throughout and may be seen to reflect the purpose of the project as it is developed.

The issues and the intention behind their resolution

1. Integration

Integration, in the sense of bringing about a 'drawing together' through creating a harmony of parts, represents the aim and purpose of the thesis in regard to Protestant Christian theology and biological science. The intention is to establish an area where these disciplines so often in conflict through loss of harmony, may be found to provide valid reasons, in one particular field, for a stable integration. To this end the enquiry looks towards the disciplines recognising the value of each other's currently changing knowledge, each contributing and receiving, for mutual benefit.

2. Humanity

Humanity, is seen as of prime importance and concern to both theology and science. It is the intention of the thesis to make use of this shared interest as common ground between the disciplines for confrontation and discussion, with the aim of finding an area of joint agreement where a sharing of knowledge is possible, with integration as the end point.

3. Human Uniqueness

Human uniqueness, implying the status of 'having no equal', is the particular concept of humanity on which the aim of the thesis depends. As the core of the project, it has to be viewed from the variety of interpretations held, in the first place by theology and science, but also by particular associated disciplines which, the thesis reveals, are interrelated. Collectively these views are of essential value to the achieving of the primary purpose of *integration*. The discipline associated with theology is philosophy, whilst for science, it is archaeology. For theology and philosophy, human uniqueness is considered as a status of nature possessed by the human race, associated with rationality, having an awareness of self and recognised as having individual existence within a community of others. For biological science, human uniqueness is directly related to the taxonomic grouping of living

creatures based on an assessment of both differences from other groups and similarities within the group. Such an assessment, being based on form and function, is fundamentally morphological, but includes the patterns of activity resulting therefrom. Whilst this is essentially the archaeological interpretation through the addition of independence of activity resulting from the human cognitive facility resulting in the creation of artefacts, the concept of human uniqueness is enhanced and clarified.

The means used to achieve the intentions

1. Through the design of the thesis

i) By questioning the grounds for conflict in past centuries, where humanity was recognised as a common interest to both science and theology by virtue of the uniqueness that distinguished it as different from all other groups of living creatures. This is achieved by way of :-

a) Exposing the source of conflict as a constant challenge felt by theology from science as the discipline developed and
b) bringing to light the role of archaeology, particularly in the field of prehistory, in relation to biological science, as it became established as a discipline in the twentieth century.

ii) By presenting, for the twenty-first century, an area of study where the challenge of science to theology may be seen to be replaced by 'parallel concepts', one from biological science and one from Christian theology, each arising through publications at the turn of the century, with humanity as the common ground for each concept. Whilst the individuality of each member of the human race becomes clear, the uniqueness of the individual human being is seen to be outside the remit of each discipline.

iii) By drawing upon other disciplines, one associated with theology and one with science, to augment the concept of human individuality with that of the uniqueness of each individual. By considering theological philosophy and cognitive archaeology in the role of 'associated disciplines', a further aspect is shown to be of relevance – the need for each associated discipline to supplement the other and it is this that gives substance to the notion of integration as a possibility.

iv) By putting forward the proposition that, through the presentation of two studies

concerning human individuality, one scientific and one theological as comparable concepts, together with two studies of the uniqueness of the human individual, one archaeological and one philosophical, integration is seen to provide valid reasons for a possible measure of union between the disciplines of science and theology.

v) By establishing the claim that integration of science with theology is possible in *one* area of common interest – human uniqueness – and to suggest its relevance and its wider application to other areas of the two disciplines.

2. Through the narrative style

The narrative style has been used in order than human beings, as central to the concepts of the thesis, are portrayed as individuals. The historical background, from the nineteenth century Enlightenment period makes apparent the role of certain individuals who were outstanding in their work and writings concerning the early scientific understanding of human beings. They were few and their endeavours were novel and without precedent – the sole source, in their particular field, of information at that time. Recognising these as 'key figures', the thesis employs a narrative style which acknowledges the value of the personal background of each in elucidating the circumstances within which their work was formulated. Whilst the solitary nature of these early 'figures' changed over the centuries of scientific development, there were, throughout, 'figures' who were seen to be representative of a more collective enterprise and so the narrative is still appropriate, though in a more specific manner. This modification, arising from the impact of the scientific development on the established theological outlook, is in the form of 'figures' as representatives of views 'for and against' particular issues by scientists and theologians, together with those who found the two 'sides' compatible, using the terms Excessive and Moderate for their distinctive points of view. With the core of the thesis being centred not on the issues on which one discipline was challenged by the other, but on parallel concepts developed by each, the style of presentation is continued in the form of 'figures', from each discipline, whose particular work is considered significant, but discussed by certain selected writers with working experience in the same field. As the thesis moves on and discussions centre more deeply and in wider fields, the narrative style persists, relating expressed views to the work and interpretation of particular 'figures' and their writings.

CHAPTER I: SEVENTEENTH AND EIGHTEENTH CENTURY BACKGROUND

In his tracing of the roots of modern Christian thought, James Livingstone designates to the Enlightenment, the beginnings of a "revolution in our understanding of ourselves and our world", that, as he says, "caused a sharp break with medieval civilisation and ushered in the modern epoch." (Livingstone 1997, p5). In the search for controversy in Britain between the sciences and Christian theology, it is this 'revolution' that emerges as the starting point of many of the issues to do with human uniqueness, the Enlightenment being the period of history when scientific knowledge confronted theological authority with essentially human concerns.

Enlightenment's philosophy heralding the discipline of science and the challenging of the authority of Christian doctrines

During the Enlightenment, taken as "that era of thought from Frances Bacon's *Novum Organum* to Kant's *Critique of Pure Reason*" (Livingstone 1997, p5), a series of free-thinkers have become renowned for their influence on the impact of science on theology, from the mid-seventeenth to the early nineteenth century; Newton, with his mathematical ideas of the orderliness of Nature, entering the field of controversy early in the era, Priestley's contribution from alchemy and chemistry coming nearer the end. It was though, as Ball protests regarding the traditional view of the pioneers of science, not that science simply sprang in 'fledgling form' in the minds of such as William Harvey (Ball 2006, p7). Renaissance thought had provoked scepticism, accepting ancient magical traditions but reforming them. Everything, living and non-living, was felt to be imbued with 'essences': the world revealed 'harmonies', the human blood 'vital spirits'. Scientists such as Boyle and philosophers, most notably Descartes, gave 'mechanical' explanations – "mechanical chains of cause and effect were involved in place of invisible lines" (Alexander 2001, p136). Enlightenment science was to continue to unravel these mysteries, particularly those affecting the human aspects of life. Influencing the trends of biological thought through the developing physiology and anatomy of medicine, other names stand out for the remarkable legacy of their work and writings. Through Hobbes and Willis, Locke and Hume, scientific knowledge came to be seen to reflect directly on human uniqueness by virtue of their interest in human nature. Influenced by Bacon's insistence on observation, Hobbes' concern was the limitations of human nature, Willis aimed to define it in terms of the body,

Locke philosophised on its power of reasoning, whilst Hume, wrestling with human nature itself, influenced Kant in his efforts to separate the scientific human issues from theological doctrine. Together they will be key-figures in the discussion of the developing science-based philosophies, along with the trends of thought, aroused by them, concerning traditional Christianity.

Behind the adoption of the early scientific methods, advocated by Bacon, for arriving at truth through knowledge and reason, however, lay an urgent need to break away from the classical foundation of traditional studies. "The new science launched a war on empty words", as Porter sees it, explaining how "All that old Aristotelian talk … and the thinking behind it, was now dismissed as futile and useless verbiage." (Porter 2003, p51), strongly indicating that metaphysics was being replaced by mechanical philosophy. For such as Willis and Locke, applying the scientific method to all that they did and thought, there was an equal urgency to be set free from the dogmas of Galen's principles, that had for so long hindered the advancement of medical science since Paracelsus' day: in fact, at meetings of the Oxford Circle during the Civil War, to which they contributed, "Galen's name was hardly ever heard." (Zimmer 2004, p174). By 1660, science, following its own course where it could, gained strength - and status - through the Royal Society for the Promotion of Natural Knowledge being established under the patronage of the King and considered to represent "a plan for creating a powerful, efficient England based on reason rather than tradition" (Zimmer 2004, p209). Throughout the seventeenth century science was gaining both credibility and authority.

The crisis for Christianity was, in Porter's opinion, that "Down the centuries, it had been the Churches which had arrogated to themselves the authority to pronounce on the riddles of life … by way of their canons on the Creation, Fall and Atonement," but "all such tenets were to come under fire from radicals, critics and wits in the free-thinking atmosphere of the Enlightenment." (Porter 2003, p xiv). From bio-medical science, the finding of a home for the soul in the brain-based mind, the distinction between material and immaterial – mortal and immortal – was becoming confused, as was the true nature of man. Human nature, heretofore considered corrupt by virtue of sin which was part of the human condition (McFadyen 2000, p17), and inherently unable to achieve perfection in this life (Hutter in Webster, J., Tanner, K., Torrance, I. (eds.) 2007, p288), was seeing itself as perfectible: moral values, for Christians divine in origin, were seeming to be the product of

reason. For educated intellectuals these were real dilemmas, their science being at odds with their faith. The authority of the Christian doctrine was at stake.

The aspect of humanity, however, which having been maintained, unquestioned, by Christian faith through the centuries, and remaining uncontested by Enlightenment science, was human uniqueness itself. Human beings were as they were created as a species, quite distinct from all other creatures, in spite of similarities in form and behaviour. Their distinction lay in the possession of a distinctly human nature, rational, dignified and beyond the rule of mechanical law. "In the seventeenth century, human dignity seemed to rest in the power of reason … which was widely assumed." (Barbour 1998, p32).

With this in mind, the challenge of Enlightenment science to Christian doctrine will be viewed from the perspectives of science and theology, tracing the central philosophies of the time back to their origins and forwards to their fields of influence. As a key-figure in this panorama, Locke will be central. His Christian attitude to science will be traced to his associate, Willis, shown to contrast with Hobbes' atheism and so to Bacon's vision of "a new science". The influence of Locke's philosophy will be followed to Hume and the contrast with his agnosticism and thence to Kant whose beliefs necessitated a separation, in his philosophy, of science from theology.

John Locke

The position of John Locke (1632-1704) as the central figure in the portrayal of scientific philosophy influencing Enlightenment thought in Britain in the late seventeenth and eighteenth centuries, stems from his status as a scholar of natural science and his eminence as a philosopher (Livingstone 1997, p18). At a time when humanity, in all its aspects, dominated open discussion amongst the educated elite, as it did the thoughts of those who could not, or dared not, discuss it, there was widespread relevance and meaning to be found in his concept of the science and philosophy of mankind.

Not a brilliant student, as a young man, nor one standing out as either earnest or diligent, he applied himself to the study of medicine at Oxford, despising the stereotyped studies and observing and copying rather than reading and participating (Zimmer 2004, pp240-42).

But the university at this time, like the city itself, was in constant turmoil. Locke's time as a scholar in the second half of the seventeenth century, was one of dramatic changes in the regime in control of the colleges, as in the authority in command of the country, the events before, during and after the Civil War affecting the lives of all, the students most particularly. The reason for this can be appreciated when the connection, in Protestant Britain, of State with Church is observed. With Charles I as Monarch, the Church of England had to bear the stamp of High Anglicanism if it were to have any authority, dissenting denominations being denied all such rights. When the Puritans held sway, in part during the War and totally afterwards, anything reminiscent of papacy in the way of ritual of liturgy was banned, together with those associated with such practices. The university, with its Christian foundation, though Anglican since the Reformation, was thus dependent on approval by the state authority for survival. Under Charles I, the High Churchman Archbishop Laud, as the university Chancellor, set the rules for admission and graduation accordingly, banishing those who did not comply and permitting only approved classical studies (Zimmer 2004, pp46-48). Under the later Puritan authority, he was himself denied any office and personal freedom (Zimmer 2004, p79) as were those who had followed his lead, non-classical scientific studies being promoted. But the collapse of all courses of study, the closing of colleges and the dispersal of students, as the War progressed, disrupted the whole way of university life and it is difficult to trace the path that learning took. From the point of view of science-minded scholars, such as Locke, there were advantages, though seen as such perhaps only in hindsight. The principal advantage resulting from the freedom forced upon both students and tutors was their association together to discuss and confer privately in their own homes (Zimmer 2004, pp114-15). This might not have had any lasting value had those involved not been broadly educated intellectuals, extremely intelligent and highly enterprising. The names of the first members of a particularly dynamic group tell this clearly, Wren, Hooke, Harvey and Willis being included as well as Locke himself: they called themselves the Oxford Experimental Philosophy Club and were later known as the Oxford Circle.

Clearly indicative of Locke's approach to acquiring knowledge was his insistence on questioning everything that required his attention – the hall-mark no doubt of his remarkable philosophy, characterised by an unwillingness to accept conventional wisdom from any quarter (Livingstone 1997, p18). He seems to have felt the need to apply this maxim to whatever discipline he encountered, from the interpretation of the current

knowledge of the human body to the traditional doctrines of the Christian faith. This manner of inquiry led him, at first, to study at first hand and in great detail the biology of the medicine he was beginning to put into practice, associating himself with the Oxford Circle and the highly original work of Thomas Willis. It was not long, however, before even these newly developing practices were rejected by him in favour of a more philosophical approach to his work as a physician. This change of attitude came about when he was drawn into a society very different from the Oxford group – that of Lord Ashley [later the 1st Earl of Shaftesbury] – where Enlightenment ideas extended to all human concerns, incorporating scientific philosophy and religion into social welfare and politics (Zimmer 2004, p248). Gradually, it seems, he formulated his own clearly defined ideas, blending, through analysis and reason, his knowledge of all kinds, including bio-medicine and Christian doctrine. In relation to the human concerns that occupied his own thinking, he applied the human capacity for reasoning in two particular ways. When applied to science's factual knowledge, reason should analyse human understanding of the facts, over and above the facts themselves, acknowledging the attributes of the brain, recognized as the mind, and when applied to beliefs in non-factual knowledge, such as theology, the limitations of the mind, set by its properties of memory and imagination, conditioned by experience. Two of the books he wrote later in his life reflect these two aspects of his philosophy: *An Essay Concerning Human Understanding* (1690) and *The Reasonableness of Christianity* (1691). Towards the end of the *Essay*, Locke provides a 'classification' of acquired knowledge which can be applied to philosophical ideas both scientific and theological:-

1) According to reason, where truth is discovered by examining and tracing ideas from which it may be derived or thought probable by deduction.

2) Above reason, where it is not possible to establish truth or probability by deduction.

3) Contrary to reason, where what is proposed as true is inconsistent with clearly reasoned ideas (Livingstone 1997, p18).

He thus gives the human mind the capacity to formulate ideas of truth independently but with limited scope, recognizing the possibility of achieving only probability or total uncertainty (Locke 1965, Vol II, pp296-308). Whilst, in a general way, Locke may be seen to deny, for science, the role of cause and effect in theorising and for theology the place for divine revelation, his analysis of reason certainly supports science's search for fallibility and theology's doctrine of an unfathomable God (Zimmer 2004, pp251-52).

At the heart of Locke's philosophy was, clearly, the human mind. For him, the mind was an attribute of the reasoning brain (Locke 1964, Vol I, p280), revealing 'the person' as 'the self' – the self, though in control of the person, was limited by being human (Locke 1964, Vol I, pp281-2). Based on his characteristic belief in the application of anatomical knowledge to the interpretation of human attributes rather than to its physiological processes, Locke put forward his own ideas on the development of the human mind, from the moment of birth. Being aware of the foetal development of the structures and connections of the brain, he decreed that the mind, dependent on the brain for its existence, was at birth 'empty': the mind gave rise to the nature of the person through the processes within it, in response to the receipt of sensory stimuli, through experience and education (Zimmer 2004, p251). In his view, innateness of mind, recognized as credible to many, was only apparent (Locke 1964, Vol I, pp9-10): any activity of the mind could be traced, he believed, to impressions made on it after birth. The thoughts and thus the nature of each human being emerged from impressions forming more and more complex ideas. There were, however, limits to the capacity for thought, amounting to boundaries, beyond which it was impossible for the human mind to advance. Whilst such a pattern of development was true for all human beings, it in no way prevented an 'individuality of mind' giving rise to the self, within the mind's limitations, and unique to each person (Locke 1964, Vol I, pp280-281). The human mind viewed in this construction had profound implications for human nature, as considered by those debating its qualities, in two particular ways; one was to do with the soul, the other with the origin of the morality that humans live by.

Notions of the soul abounded, ranging from the Aristotelian soul of many faculties associating itself with all the senses of the body (Zimmer 2004, p12-13) to Descartes' identification of the pineal as the lodging place of the body's spirits (Zimmer 2004, pp36-37). A further variation came from the so-called mortalists who, denying immortality, could not sanction an immaterial soul as a control or determinant of human nature (Zimmer 2004, p79). For Locke, human nature was expressed through the individual person, the self, not the soul (Porter 2003, pp74-77). He did not deny immortality, but related it to the self which originated in the material, and so mortal, human body (Porter 2000, p109). The human mind, moulding individual nature, was also the source of moral principles: ideas were responsible for moral judgements, ideas shared between individuals initiating the formulation of ethics for their guidance. In Locke's philosophy, mankind could

become better through the creation of an ethical code, by the working of the mind.
As far as Locke was concerned, it was this quality of mind, and thus behaviour, that gave to mankind an undoubted uniqueness within the living world. The idea was acceptable to preachers and teachers, laity and scholars, since it was considered that the human race existed as it had been created, with distinct physical features together with mental powers of thought, feelings and language, as observed in the 'savage' humans living in the uncivilised parts of the world. Such a view of uniqueness was totally consistent with the biblical narratives underlying Christian beliefs of the time. Not consistent with Christian doctrine though was Locke's view of human nature which gave it that uniqueness.

Locke, a devout Christian, did not choose to create doubts for his fellow Protestants about the fundamental issues of God and Man or the essence of Christianity revealed in Christ: he wished, rather to strengthen their faith through reason. His declared purpose, as indicated in his *Essay*, was to look into the grounds and degrees of belief, opinion and assent, concerning human knowledge. His search was for simplicity through reason and the rejection of those traditional interpretations of Scripture which, to him, were contrary to reason. The unreasonableness of such doctrines lay in certain fundamental beliefs and the dogmas that had grown up around them. The dogma of the Fall and Original Sin conflicted with his view of the self, developing from the moment of birth through experience. Similarly the doctrine of the soul, implanted by God, was inconsistent with the reality of his observations. God could become known to the human person through Nature and the Scriptures, in so far as reason made it possible. To the theologians, struggling to assert the authority of their discipline, Locke was seen to be 'usurping God' (Porter 2003, p8). In Christian doctrine, God was the sole source of truth and understanding, of moral values and of the means of becoming better through redemption, all of which was made known only by divine revelation, not reason. This was the crucial issue causing the controversy that came to exist between Locke and the Protestant churches in Britain, where reason was seen as a human faculty used in the interpretation of scripture but not an independent source of Christian belief (Moore in Webster J., Tanner, K., Torrance, I. (eds.) 2007, p396).

There existed for Locke, as for others making their ideas known through the publication of their writings, conflict also with the authority of the State in relation to religious adherence. In the political turmoil of the time, changes in the law brought charges of treason for past or present allegiance to former regimes; confiscation of data, burning of books,

imprisonment and execution were threatened and carried out mercilessly. Locke was cautious, going into exile for a period, but sought and gained the approval of the Puritans as well as the reigning monarchs Charles II and Mary II, through their interest in his work (Zimmer 2004, p252).

If a continuous line of scientific philosophy is to be traced through into subsequent centuries, ideas from which Locke's views drew inspiration need to be established. By looking back at the work of Thomas Willis, a devout Christian and eminent physician, a picture of the background to a similar scientific philosophy can be presented, together with a glance at Thomas Hobbes whose views, as an atheist, differed significantly from Locke's. For an origin to Enlightenment thought in relation to the human issues common to science and theology in the early seventeenth century, the 'new ideas' will be traced to Francis Bacon's *Novum Organum*.

Thomas Willis

Whilst John Locke is regarded by many as of supreme importance to English philosophy as a leader of Enlightenment ideas on the nature of human reason (Zimmer 2004, p299), Thomas Willis (1627-1675) bears the reputation of 'Father of Neuroscience', an area of the brain being known to this day, to followers of the tradition he created, as 'the Circle of Willis'. Like Locke, he was one of the Oxford Circle (Zimmer 2004, p95), a medical practitioner, a devout orthodox Christian and a supporter of the monarchy and the Church of England. Unlike Locke he was a diligent and enterprising scholar, working tirelessly, throughout his life, on the study of anatomy by dissection and experimentation, at the same time as employing observation and novel remedies to his patients (Zimmer 2004, pp202-206). As an admirer of Harvey and his work to reveal the true function of the heart and its control of the blood system, he set about establishing the function of the brain as controller of the senses of the body (Porter 2003, pp55-56). Following his practice of recording symptoms, treatments and results about his patients' conditions, as his *Casebook* shows, he took upon himself to describe and discuss in meticulous detail his dissections and experiments, being assisted by an equally enthusiastic Circle member, the skilful Christopher Wren, who undertook the anatomical illustrations for his books, *The Anatomy of the Brain and Nerves* being of particular note. In the realisation of the breakthrough, in the face of ignorance and taboo, which the knowledge of human anatomy by the Oxford

scientists was engineering, Willis' work can be seen as a great leap forward for biological science. It was, in addition, a significant element in the extremely slow transition of the theological concept of the soul as separate from the body through spiritual mystery, to an 'essence' existing and developing within the body's mind (Porter 2003, pp59-60).

To relate this gradual change to Thomas Willis, a closer look, not only at what he accomplished, but also at the purpose he had in mind in all that he did, must be undertaken. His purposes were three-fold: one concerned his patients, one his beliefs and, aiming to bring the two together, his scientific skill. Ever present as a concern of the highest order for Willis, was the problem of physical pain and suffering. It was not just that he wished to relieve the symptoms or cure the condition, but that he saw sickness of the body becoming mental derangement, which was infinitely more serious. It was serious for him in a theological way, in that, if strong enough, disharmony between the organs of the body would disrupt the harmony of the mind, causing madness (Zimmer 2004, pp222-23): madness was seen in Christian doctrine as spiritual sickness, as giving way to evil formed a barrier between the soul and God, thus precluding the hope of salvation. The aim, for Willis, was to control those defects of the body which might damage the soul, through medical treatment (Zimmer 2004, pp106-7); this is where his science played its role. In common with students of both medicine and theology in the seventeenth century, Willis had a wish to be freed from the restrictions, forced upon their reasoned thinking and novel ideas, by the traditions, followed by both disciplines, of Aristotelian philosophy and the principles of Galen (Zimmer 2004, pp86&199). Aristotle's centring of all the senses of the body in the heart and Galen's humours controlling the responses, were equally intolerable (Zimmer 2004, pp12-15). One of the joys of watching and discussing Harvey's work on the circulation of the blood, was the identification of the heart as merely a pump for the system; any connection of the heart with the senses could only be an indirect one. His own work would lead to a reversal in the view to be taken of the heart and brain functions. Galen's belief in the humours, warring together to create feelings in the brain and responses in the body, was being seen as an illusion: his own work was destined to lead to the understanding of the nerves throughout the body receiving and responding to impressions from outside and being under the control of the brain (Zimmer 2004, pp264-66).

Thus, by the time that Locke was observing Willis' dissections and studying his own

students' notes, the anatomy and manner of working of the brain and nerves was becoming established and recorded in printed books. As a basis for scientific analysis, Willis' scrupulous recording of data, repeating of tests and observation and continual judgements of value, set up standards acknowledged by Locke in his formulation of thesis in principles, and lasting with modifications through the centuries to come. Taboos around the usage of human cadavers and the preserving of parts for study were breaking down, as were the restrictions to learning set by classically based studies. Resulting largely from the changes forced upon university education by the political authority of the day, the freedom experienced by the Oxford Circle also came through the support gained by the patronage of both Charles 1 and Charles II, as well as the approval of the Puritans when in power (Zimmer 2004, pp124-26).

Encouraged by the advancement of his work, Willis proceeded to formulate his own notion of the spirits and soul of human beings. Souls were not, in his view, the prerogative of humans: animals had souls, as spirits operating throughout the body, being of a material, mortal nature. Every human had the same animal soul, but in addition, an immaterial rational soul, implanted within the brain at birth by God, returning to God at death (Porter 2003, pp58-59). The animal soul of both animals and man provided for learning, a sense of the surroundings and some reasoning; the rational soul gave humans a moral sense, through reason, of right and wrong and, with it, the need for repentance for misdeeds. The rational soul, however, though present only in the brain, was not totally isolated there: immaterial as it was, it both influenced and was influenced by the animal soul's activity. This two-way interrelationship, nevertheless, depended upon the good health of the body, severe sickness not only disrupting the brain but the rational soul as well (Zimmer 2004, pp221-23).

Though built on certain accepted concepts of the time, such as Descartes' confidence in a human soul and Galen's belief in the internal communication by nerves, Willis' scientific outlook was radically different from the current theories, both scientific and theological. He differed from the traditionalists in giving all creatures an animal soul, but, more at odds with them, was his declaration that the brain, not the heart, was the controlling centre of the human body's activity. This way of thinking, though beginning to be incorporated into philosophical science, had within it the elements of controversy, being in essence, directly opposed to the pronouncements of the Protestant churches. Conflict, however, did not

arise (Zimmer 2004, pp229-30). Living through the troublesome times of the Civil War and its aftermath, Willis, a loyal Royalist and member of the Church of England, was well aware of the danger of being the cause of disruption, or even being associated with those who were. Wisely, it seems, he preserved his image as a devout man, by using his home as a centre for worship and seeking the patronage of Church leaders, dedicating his principal work to Archbishop Sheldon. Like Locke, he had no wish to cause doubts for Christians by his philosophy, seeking only to 'unlock the secret places of man's mind'. By being invited to become a member of the Royal Society, the value of his work was being acknowledged not only for its scientific excellence, but also for its contribution to the Society's declared purpose of glorifying God (Zimmer 2004, p234). His contribution to the Enlightenment's controversial issues is clear: by associating the immaterial soul with the material brain, he was setting the scene for knowledge and understanding to be derived from both revelation and reason (Zimmer 2004, p290).

Thomas Hobbes

The work of Thomas Hobbes (1588-1679), in the eyes of philosophers of both science and theology, was quite clearly controversial. Not, by birth, a member of the elite society or the virtuosi of the developing sciences, Hobbes spent his adult life under the patronage of the Cavendish family, as a private tutor. Though a mathematician, not a student of bio-medicine, many of his ideas and writings were based on natural philosophy, this being particularly so where his concern was with the nature of human beings. Together with this outlook went a fundamental materialism, combined with anti-clerical and atheistic views about religion. Accepting the assumption of human uniqueness by virtue of reason, he added to this both willpower and language for the expression of human ideas. His view of human nature was complex, as his book *Leviathan* revealed. Humans were, by nature, for Hobbes, selfish and amoral, quarrelsome and superstitiously fearful: selfish on account of 'the self' being of prime concern and thus amoral in selecting 'the best for me' as good; quarrelsome through lack of concern for others, yet fearful of being unprotected from unknown evils. These weaknesses made human society impossible unless the population was supervised, though this would have to be by consent, a chosen representative being given the authority. Far from being based on a scientific observation of human nature, this concept was founded on a mechanical view of matter, man and nature being entirely material and existing merely as machines. Consequently there were no moral values in

nature: 'good' was what gave pleasure, 'evil' what gave pain (Norton 1993, p290). Whilst much of such an outlook was not new, the construction placed upon it by Hobbes was sufficient to cause conflict. In the first place, it called into question the relationship between human freedom and public authority, but in the second, and of profound significance to Christians, it challenged the association of human free-will with divine autonomy. It was clear that, in such a materialist scepticism, there was no place for the supernatural; even though immortality was not denied, there was no soul for man and no existence of God (Zimmer 2004, pp128-29).

Whilst enjoying being the centre of interest, particularly at Court at the time of the Restoration, in later years, Hobbes found his work was condemned in both academic and religious circles. Considered heretical, *Leviathan* was condemned by booksellers, and Charles II, in his youth having been taught by him, refused permission for the publication of his last book. The Church attacked him for representing man as a machine and, thus, without responsibility for good and evil, some bishops even blaming the Fire and the Plague on his heresies. He was denounced by scientists for his outmoded work and for this, together with his atheism, he was denied membership of the Royal Society (Zimmer 2004, p232). Thomas Hobbes was undoubtedly a controversial figure, both in his lifetime and beyond, challenging the authority of Christian doctrines concerning human nature, in particular (Zimmer 2004, pp232-33), but conflict arose from his atheism and materialistic philosophy, rather than the interpretation he gave to scientific knowledge. His contemporary, Willis, disagreed with him on all counts, Locke, coming later, rejecting his philosophy as unsubstantiated and extreme.

When searching back in time, for the source of the science of humans which advanced its challenge to Protestant Christianity, it is to the early development of the practice of observation, collection of date and systematic analysis that the origin is found. At the turn of the seventeenth century it was Francis Bacon (1561-1626) who, in Britain, advocated a radically new method of study by observation and experimentation – the scientific method (Zimmer 2004, p131). His determination to replace the traditions founded on Aristotle's *Organum*, inspired the choice of title for his book expounding the new philosophy, *Novum Organum*. An aristocrat (Viscount St Albans), a lawyer and M.P., Bacon was educated in the classical style of the time and he came to believe that, with the capacity of their understanding, humans were the authors of their own destiny and must progress towards

that end. The underlying urgency of his philosophy was that human nature was such that there could be no stopping or resting in the progress of learning, but always a pressing onward. For this there must be a method for acquiring knowledge to replace the restricting traditions of the past, discovery coming, not from abstract thought, but by routine and tested processes. By the middle of the century, Willis was to be rigorously putting these principles into practice (Zimmer 2004, pp151-52). Bacon recognized, however, that there was much that was remote and hidden in nature, but before the unknown could be grasped, a much better application of the human mind and its understanding would be necessary. Locke's categories of human reason suggest just such an application.

A science-based philosophy, contrasting so clearly with Protestant teaching in seventeenth century Britain, was certainly seen as controversial. Bacon, himself, however, made great endeavours to avoid conflict at all costs. His own conviction was that the advance of learning came through the study both of the Book of God's word [the Bible] and the Book of God's work [Nature], though each needed proficiency and skill, as well as wisdom in not allowing them to mingle and confuse the student (Porter 2003, p64). Being well acquainted with the elite of society, he was able to gain support for his ideas from the highest of those in authority, namely the monarch, James I, to whom he dedicated his *Novum Organum*. In so doing, Bacon set a precedent for such as Willis to follow, securing through patronage by State or Church, the right to make their work known.

David Hume

In tracing the scientific philosophy of the Enlightenment forward, from Bacon, through the seventeenth century, the trends of thought inspired by Willis and Locke and their supporters, can be followed through into the next century by way of the philosophy of Hume. A Scot with a Calvinist background, David Hume (1711-1776) was a scholar of classical studies at an early age, becoming proficient in a wide range of disciplines, from mathematics to logic and natural religion to moral philosophy (Norton 1993, pp1-2). Not a scientist, ignoring the imaginative concept of theorising, yet believing in the scientific requirement of observation and experimentation, in so far as it implied the application of reason. A self-confessed sceptic, but with a profound concern for human understanding, he advocated the study of human nature in a scientific way, and free from superstition and

prejudice (Porter 2003, pp328-29). In this he was exploiting Bacon's methods in constructing his philosophy and adapting Locke's principles of reason to his own ends. As his writings show, his pronouncements were of his own making and for his own purpose which was to open the eyes of the public to the importance of the science of the mind (Norton 1993, Ch 2.). His intention was to discover something of the principles by which the mind is activated in its operations. Human understanding, in his view, was not dependent on reason, but upon the impressions from observation and introspection, which came from experience. Emotions, not reason, provided the motive for achievement. Feelings led to bonds of union with others and morality, though a natural virtue, developed through social impressions. Always looking for regularity, Hume saw these principles as part of the laws of nature. Such uniformity, however, did not extend to the individual human. Personal identity depended upon a union of ideas through memory and imagination allowing independent thought (Porter 2003, p330). He pictured the growth of this nature in man from the ancestral savage human being, where experience had not as yet created a sense of bonding with others for mutual benefit (Norton 1993, pp9-10). In the primitive state, human nature, though selfish, was not subject to the disputes and injustice associated with possessions derived from industry; the potential for moral values was not yet formed into laws. It was this human nature, possessed not only by living humans, but also by their ancestors, and by savages both of the present and of past times, that distinguished them from animals, giving them their uniqueness in the natural world.

Whilst a representative of human uniqueness along these lines did not provoke criticism, being largely in agreement with the accepted view, Hume's portrayal of human nature was controversial. Having rejected Calvinism and declaring himself an unbeliever, his views show how he was sharing in the Enlightenment assault on the authority of Christian dogma, particularly the submission demanded through instilling fear and superstition. Though never attacking the established Church his challenge to Christianity was from his idea of human nature being devoid of a soul, a morality and an afterlife, as gifts of God; the existence of God was not denied, but any connection with human beings was an illusion (Barbour 1998, p44). Such was Hume's philosophy of the human condition, not taken up widely in his lifetime, but influential over the centuries to come.

Immanuel Kant

Towards the end of the eighteenth century, a challenge to Christianity, reflecting to a significant extent Hume's ideas of human nature, arose through the radical philosophy of Immanuel Kant. Not a scientist himself, but with a keen interest in the advancing progress of the sciences, Kant (1724-1804) developed a theological philosophy which showed the importance of Hume's influence and projected it into Enlightenment theories of the next century (Norton 1993, p227). Having lived all his life in E.Prussia (Livingstone 1997, p53), his own influence was evident, in the first place, in W.Europe, but, as in intellectual circles this included Britain, his work was studied and considered significant by British philosophers of the era. Born into a devout pietist family, as a young university lecturer encountering the new philosophies of religion, he found himself obliged to abandon much of the tradition he had grown up in, which included the priestly rule of the Church and its emotional practices. Not denying his allegiance to the Christian faith, he determined to separate its foundations from the formulae for acquiring knowledge and morality which was to become the hallmark of his philosophy (Livingstone 1997, p69).

The starting point for Kant's philosophy was the nature of knowledge: that which the human mind could find a way to, was accessible, that which it could not, being inaccessible (Drees 1996, p41). From this followed the nature of human understanding, together with its relationship to the finitude of the world, life and mankind, as well as the limitations of reason as a means of fathoming what could and what could not be known (Tillich 1968, p360).

The acquiring of knowledge by the human mind depended, in his view, upon two jointly operating elements. Within the mind, sensory information was recognised through impression from the outside world. This 'raw material' then had imposed upon it certain innate categories of human thought by which it was understood. The principal category, time and space, limited the understanding to the finite world, of which the human person was part; it could not extend to the infinite, or what might transcend the finite. Reason, arising from accessible knowledge, could thus relate only to knowable facts and phenomena observed by science (Livingstone 1997, p62). Human thought, however, could experience value as well as fact and from this, he held, certain a priori propositions constituted a moral order, which was responsible for the human conscience, through the exercise of freedom of will. Thus the source of the moral order transcended the material world (Livingstone 1997, p65), through presuppositions of goodness, happiness, justice and

eternity, and in this, encapsulated the concept of God and the soul with freedom and immortality. In Kant's philosophy religious matters had, therefore to be considered with a different and separate reasoning from the empirical judgements of the material world. From this framework, the implications of his ideas about human nature, human uniqueness and the controversies they might invoke, can be drawn.

In Kant's philosophy, the rational side of human nature, though having the means of gaining and processing information, is limited by the finiteness of the human being. Access to the infinite, impossible through this sort of reasoning, came only through God's provision of Grace. With this Grace, however, is given freedom of will, thus leaving open to choice, for humans, all decisions about morality, that is to say, whether or not the moral imperative which is recognized, is in fact taken into the actual will. Since, in Kant's view, the actual will of human beings is perverted, all decisions are influenced by man's radically evil nature (Kant 1960, pp15-17). Whilst all animals are finite, though "without knowing it" (Tillich 1968, pp362), it is this aspect of human nature that gives for Kant, the uniqueness that is human. The theological outcome of this way of thinking, was not a denial of God, the concept being beyond rational thought, but a repudiation of any understandable exchange between God and man by way of a mystical presence or holy spirit (Tillich 1968, pp360-62). The Kingdom of God meant the establishment of moral mankind on earth, exercising individual choice to bring about social justice and peace (Tillich 1968, p361), yet underlying the radical pronouncements, certain fundamental doctrines are clearly supported (Kant 1960, pp88-92).

In so far as the idea of human uniqueness, in the seventeenth and eighteenth centuries, went uncontested, Kant's view that the mind of man in its capacity to reason, separated the human race from the rest of the world's creatures, did not arouse dispute. The controversy that arose concerning that reasoning nature came, on religious grounds, most strongly from those for whom Natural Theology provided an explanation of everything: Kant, following Hume's lead, had rejected such a notion, maintaining always a recognition of the unknown and unknowable. For orthodox Christians there were areas for agreement: the radical evilness of man's nature was reminiscent of the doctrine of original sin and any dispute with Natural Theology could be seen as an aid to the Protestant cause (Tillich 1968, p362). Nevertheless, beyond this, there were grounds for conflict, the Christian faith in the Grace of God operating in the lives of believers being one, as was the coming of God's

Kingdom being identical with the establishment of moral man on earth (Tillich 1968, p365). It was, though, Kant's philosophy of the working of the human mind rather than the science of the mind itself, that was contested. Although his critical ideas are associated primarily with German Enlightenment, he was praised by all theologians of the nineteenth century for his insight into "man's creaturely finitude" (Tillich 1968, p366).

From enlightenment science in Britain, then, a trend of ideas relating to the role of reason in the establishment of philosophical truth in all its aspects can be traced through the seventeenth to the eighteenth century by way of the work of Bacon, Willis and Locke, together with that of Hobbes and Hume, to the influence Kant's writings had on moral philosophers. Bacon's emphasis on the need for experimentation with observation and experience, taken up by the newly formed Royal Society, influenced those who were determined to acquire empirical knowledge about the world, such as Willis. This type of advancement in experimental science is reflected in Locke's philosophy of gaining assurance through reason, for all tenets of truth. The scepticism of Hobbes and Hume regarding the application of rational philosophy to religion is recognised as having provoked a response by Kant, whereby rational and theological philosophy were kept as separate issues. What seemed to be happening, even from Bacon's time was that science and philosophy were becoming separated as means to knowledge (Charry in Webster, J., Tanner, K. and Torrance, I. (eds.) 2007, p414). Scientific experiment was giving authenticity to experience which had earlier been the province of philosophy which included the theological philosophy of the knowledge of God by divine revelation. The question was then, did the knowledge of God by humans come through reason or revelation

Theology's defence

Setting aside the conflicts that arose between Enlightenment science and the authority both of State and Church and the universities, the work and influence of the key figures reviewed, is instrumental in illustrating the nature of the challenging issues confronting Christian doctrine in Europe, concerning the uniqueness and the nature of human beings. It remains clear that, at no time during this period, was the uniqueness of humans, amongst the living creatures of the world, in any serious doubt: it was not, of itself, a controversial issue between bio-medical scientists and Christian theologians. Human nature, which gives humans that uniqueness, was the source of conflict, the disagreement

bearing as it did, from the challenge of reason to the belief in divine revelation, on the doctrinal issues of the soul, the fallen nature of humanity and human amorality (Porter 2003, p18). Whilst in the extreme view of Enlightenment thought, such as is reflected in the ideas of Hobbes and Hume, the soul was denied, in the more moderate philosophies, held by believers, such as Locke and Willis, its significance was confirmed. But the imperfect nature and amoral status, with which the human race was labelled by theology, constituted a general challenge from science which necessitated confrontation (Porter 2003, pp80-81).

In traditional Christian doctrine, the soul of humanity was the means whereby God was made known to the individual person, directly or indirectly by revelation. Denial of the concept of the soul meant either the denial of God or of his redemptive power. Denial of the soul implied denial of divine revelation, the only source of true knowledge and understanding of humans, whether by inspiration or through the Scriptures and Nature. The true nature of man, was a fallen one as a consequence of original sin according to biblical testimony. This interpreted sin as radical and universal and an inescapable structure of existence (McFadyen 2000, p18), and implied an acceptance of accountability for what had been done by others through inheritence, and thus a moral responsibility on all human beings. Such an interpretation was to bring conflict with Enlightenment reasoning on both scientific and moral grounds: a literal acceptance of the myth of the Fall was contrary to the growing understanding of human biology and the inherited 'bondage to sin' conflicted radically with the notion of individual freedom of will. For Protestants, at the time of the Enlightenment, Christian doctrine followed these themes through with pronouncements from which disagreements inevitably arose. No man had the ability to redeem himself in the eyes of God, either by good works or honest reasoning: Christ alone was the redeemer of humanity. True morality depended not on human law but on God's judgment, knowledge of good and evil having its source in divine revelation, not human reason. Man's disobedience had brought about a fall from God's grace and the flawed human nature represented original sin reflected in self-indulgence in desires, greed and wickedness, and as original guilt before birth. This was inherent in all human beings and could not be changed. Human reasoning, not having the capacity to distinguish between good and evil, could not accomplish true morality: ethical laws were God's prerogative and were made known to man by revelation (Gilkey 1970, pp4-7).

The response to the challenge within the Protestant Churches varied. For orthodox Anglicans, both high and low-church, and Methodists, seeking to find common ground with Enlightenment science, the stumbling block was the doctrine of original sin. Sermons and lectures, tracts and declarations, confirming this teaching, made any idea of the perfectibility of human nature, through reason or achievement, an impossibility. For Samuel Bradbury, a prominent Methodist of the latter part of the eighteenth century, original sin was the leading principle of Christianity – men being equal only in their common corruption (Hole 1989, p142). With Anglican authority, Bishop Barrington, in his Durham Charge (1797), declared that man was radically and profoundly tainted with evil (Hole 1989, p142). Speaking as a layman, William Wilberforce expressed the view that human corruption was grossly underestimated, vice being habitual, not accidental (Hole 1989, p142). However, Joseph Priestley, a Unitarian preacher as well as a scientist, rejected the doctrine outright (Hole 1989, p143), as did Mary Woolstonecraft who was strongly opposed to what she believed to be the false view it gave of human nature as naturally inclined to evil (Hole 1989, p143). Priestley's Unitarian colleague, Richard Price, went further, considering humanity's natural state to be virtuous, human nature being essentially good as well as rational. His view of sin was that it was not inevitable as a result of man's fall from grace, but avoidable as a personal fall, resulting from God-given liberty of individual free-will (Barbour 1998, p269 & p353). Priestley, adopting the Lockean scientifically-based sensationalist epistemology, viewed human morality as being learnt through life's experiences, moral standards being relative and varying with individual feelings of right and wrong (Hole 1989, p63). Price, on the other hand, held a more Kantian view in that he believed in the possession by humans of an innate morality. Moral issues were, for him, neither dependent on experience, reflection nor education, nor yet instigated by faith or opinion. He advocated a law of 'rectitude' as the underlying principle of innate morality since, in representing God's own nature, it carried with it an absolute obligation of obedience (Hole 1989, p64). Liberal Anglicanism, reflected in the unorthodox views of William Paley, also took up a dissenting position. Paley, Archdeacon of Carlisle in the 1780s, a scholar and holder of many positions in the Church of England, interpreted Locke's principles in a different way. He agreed that morality was learnt socially, but what was acquired was a moral sense, not a source of moral authority, nor a code of moral obligation (Hole 1989, p73). The moral sense gave to the virtuous human mind the will to ensure the greatest happiness, not principally for oneself, but the greatest number of people. This intention would receive God's sanction because it represented the will of God

(Hole 1989, p76): failure to act accordingly would lead to Hell, the pursuance of general happiness to Heaven. There was, however, one proviso consequent on Paley's certainty of original sin: this was that innate self-interest required restraint. In his view, restraint came through a faith in the four Last Things, Death, Judgement, Heaven and Hell (Hole 1989, p78). Other than that, mankind could be assured that God enforced the morality determined by the reasoning of the virtuous mind (Hole 1989, pp75-78). This radical outlook, however, roused deep antagonism within the Church of England - bishops, Anglo-Catholic and Evangelical, such as Samuel Horsley and George Pretyman-Tomline, vehemently preaching the divine nature of morality (Hole 1989, p79). Others opposing Paley's latitudinarian stance, did so on the grounds of his neglect of the essential truth of supernatural revelation for the Christian faith, but doctrines concerning revelation seemed not to figure so prominently in sermons, preachers giving prominence to repentance for sin and improvement though divine morality. Bishop Butler, however, attempted a compromise which, though plausible, proved, as Barbour points out, unconvincing (Barbour 1998, p36). In his *Analogy of Religion, Natural and Revealed* (1736) he attempted to vindicate the revelation of Scripture on the grounds of its analogy to natural theology, each being both ambiguous and obscure as well as clear and enlightening.

Philosophy, at the time, though concerned with the question of what constituted knowledge and how to acquire it, was offering an alternative to the widely accepted notion of rationalism as the answer – namely empericism. Hume's idea of knowledge being developed from the acquisition of sense impressions rather than pure reason, reflected this view. Locke, on the other hand, emphasised the value of experience in gaining knowledge but together with reasoning. Thus it could be said that there was a role for both rationalism and empericism in the seeking for a foundation for knowledge. The Bible, then, had to be tested against reason and/or experiment; there was no role for revelation (Graham in Webster J., Tanner, K., Torrance, I. (eds.) 2007, p520). Herein lay the beginning of the separation between philosophy and theology which was enhanced by the advancement of natural science as a form of knowledge. Yet, for theology, there remained the notion of Natural Theology as the answer, with its claim that theological truths can be found through the observation and study of natural phenomena of the world around. Nevertheless, by the middle of the nineteenth century, science would be presenting theology with another challenge with undoubted relevance to the issue of human uniqueness – the theory of biological evolution.

CHAPTER II: NINETEENTH CENTURY SCIENTIFIC ADVANCEMENT

Whereas, through the eighteenth century, philosophical ideas were giving grounds, through fundamental differences, for a break with theology, where the authority of traditional doctrines continued, the nineteenth century was to witness a rift emerging through controversy arising from the advent of 'Evolution' – a subject of undeniable relevance to the science of human life and the theology of humankind. Eighteenth century philosophical science was also giving way to academic science as a discipline in its own right and within its own particular provinces, unrelated to theological dogma. Geology and palaeontology were enabling biology to establish itself, as a separate discipline from Christian doctrine - a separation, not as absolute as Kant had visualised, but allowing perspectives to prevail on ground common to both science and theology – human nature's role in human uniqueness, in particular. For some, it was Natural Theology that made this form of limited separation feasible since views from either side were seen as relevant and, by agreement, could unite.

The promotion, by dedicated intellectuals, of biological theories which questioned the authority of Christian interpretation of the Scriptures

Growing up and developing his ideas in the wake of these new perspectives of science's place in British culture, was a scholar who, throughout his life, endeavoured to preserve, in his theorising, two perspectives of mankind – one from his scientific knowledge, the other from his faith in God. This was Charles Lyell (1797-1875), a man of great repute who will be taken as the 'figure' of his time representing a moderate view of the relationship of nineteenth century biological science with Protestant doctrine, as eighteenth century trends of thought about human nature were undergoing a challenge.

For one adopting an extreme view, an academic biologist having no professed faith in God, Thomas Huxley (1825-1885) will be the chosen representative. Not only was he talented in his own field, but showed extensive knowledge which he expounded upon with outstanding skill.

Faced with new challenges, the Church maintained its stance through modification and

ever-widening variation. One 'figure' who stands out in the controversies that arose, is Samuel Wilberforce (1805-1873) – a bishop of the established Church, holding views that straddle the various persuasions: he will represent the response of the Protestant churches to the challenge of nineteenth century science.

Charles Lyell

Charles Lyell was born into a wealthy family which provided him with independent means throughout his life. The career planned for him was as a lawyer, but, after a short while as a practising barrister, he turned, as a non-professional, toward the new separate science of living things, for which "in 1802 Lamarck had coined the term 'biology" (Young 1992, p82). Lamarck was an eminent botanist who had persuaded the new revolutionary government of France to appoint him to a responsible position at their Museum of Natural History. In this capacity his work, approved of by the authorities, could be published, distributed and discussed throughout Europe. The essence of his work was the drawing together of knowledge established by earlier scientists such as Linnaeus in systematic botany (Young 1992, p81) and Cuvier in comparative anatomy and palaeontology (Young 1992, pp89-90), in order to develop what he saw as comprehensive theories. In his broad view of living organisms there were two elements: one was that animals and plants could be arranged according to their complexity; the second was that this variation represented a linear progression brought about by the evolution of the complex members from the simpler ones (Young 1992, p82). This 'ladder of nature' was brought about, in his view, by the 'power of life' (Young 1992, p82). These ideas were quite the opposite of those working in these fields and led by Cuvier at this time. It was thought by them that systematic studies, particularly of vertebrates, together with fossil evidence through geology, gave grounds for the belief that periodically, through the Earth's history, violent changes had taken place with consequent effects on living creatures: the pattern of species had to be related to these 'catastrophes' and not to any kind of evolution, for which there was only unconvincing evidence (Young 1992, pp94-95).

There were two fields of influence, developing freely with the support given by France's republican State, unrestricted by Church authority, which were spreading internationally. Firstly, in Britain, where geology was being recognised as vitally important to both botany and zoology, issues being debated touched closely on the major concerns of the time, over

the age of the Earth and the manner of Creation. Secondly, in Scotland, at the end of the eighteenth century, James Hutton, working on the strata of the earth's surface, presented to the Royal Society of Edinburgh a Theory of the Earth (Young 1992, p72). In this he proposed that the layers being observed had been laid down over very long periods of time through the agency of erosion, sedimentation and eruption (Young 1992, pp70-71). The processes making up this sequence were, he thought, the same as those operating throughout the world at the present time. William Smith, a consultant surveyor engaged in canal building in the south of England, supporting this theory with his own experience, began to make use of fossils to establish the correlation of rocks separated by earth movements (Young 1992, p94). Geology and palaeontology were together advancing a new idea: it was "the essence of a school of thought that became known as 'uniformitarianism' (White and Gribbin 1995, p90); processes being observed going on at the present, had been going on in like manner, unobserved, throughout the earth's history.

When Lyell was starting out on his life-long work in natural history these were the major themes emerging and being encountered by biologists and geologists alike as their fields both widened and became more interrelated. It was inevitable that disagreement and controversy would arise in Britain as it had done in France (Livingstone 1997, pp251-2), but for scientists in Scotland and England there was an additional area of conflict. Whereas in France there were no restrictions imposed by Monarch or Church (Young 1992, pp80-81), this was not so in Britain. As in former centuries, university positions could be offered only to Church of England clergy, or through the Church's special sanction, regardless of the particular discipline that was to be taught. In addition, the established Church could, through Parliament, influence legislation regarding the advancement of science, as well as the Monarch, whose interest and approval meant so much to individuals and institutions striving to succeed. Academic scientists employed in recognised institutions risked dismissal if, by putting forward controversial theories, establishment doctrine was being contravened (Cosslett 1984, p146). Lyell himself was free from any such restrictions, being free-lance and independent. Having this measure of freedom, enabled Lyell to consult, discuss and correspond with colleagues in a variety of fields and holding very different views (Young 1992, p128 & p149). His own work was of a high order, gaining him recognition and respect academically as well as eminence in the eye of a public, eager for intellectual advancement. Harriet Martineau, a popular nineteenth century writer, considered him to be earnest-minded, accomplished and genial, yet having "a scotch

prudence which gave way, more and more … to an expanding liberality of opinion" (Martineau in Orel (ed.) 2000, p87). What he accomplished, however, came about through lengthy expeditions at home and overseas, tirelessly engaged in detailed field work, collection and recording. His geniality showed not only in his sharing of his own findings but in supporting and encouraging others and promoting their work, as he did with Darwin's *Origin of Species*. At a different level, and through Prince Albert's interest in scientific advancement together with the reputation he had acquired, he was invited to Balmoral in 1859 and was also mentioned in Queen Victoria's journal (Neville 1997, p60). Whilst holding firmly to theories drawn from his work, Lyell was often seen to be indecisive regarding 'unestablished' notions. Darwin felt this over his reticence regarding natural selection, judging by the bitter words, in a letter to him: "I had always thought that your judgement would have been an epoch in the subject" (Darwin in White and Gribbin 1995, p228). His changes of mind, which were frequent, could reasonably be viewed as expressions of liberality, the outcome of absorbing new information and reflecting upon it. Certainly, being recognised, throughout his life, as holding balanced views, he may be taken as a representative of middle-ground opinion, not only of contemporary science but also of the attitude of Christians to its advancement.

Lyell's chief interest was in geology. At Oxford he had listened to William Buckland expounding on Hutton's earlier theory of the formation of geological strata through erosion and deposition, adding wide-scale flooding and tidal wave action as causes, and extending the importance of fossils to their role in the idea of progressive development of organic life through geological time (Young 1992, p105 & p99). These ideas interested him deeply, as did those of George Scrope who, in his study of volcanoes (Young 1992, p106 & p99), extinct and active, identified lava-formed strata as the result of erosion over great epochs of time. Inspired by these ideas, he set off on a ten-month expedition to observe for himself, in Europe, the events and results of volcanic action and to relate his findings to living organisms of the past and the present (Young 1992, pp100-101). So valuable was this time to him that he was able to develop deep and decisive ideas of his own strengthening his belief in the uniformity of the physical world through time. As well as analogies between earth-changing events past and present, "the analogies he saw included those between the biological environments of the past and the present" (Wilson (ed.) 1970, p xvii). On his return he set down his ideas in the first volume of his *Principles of Geology* (1830) in which he advocated the application of uniformity, indicating his intentions in the

book's sub-title, *An attempt to explain former changes in the Earth's surface by reference to causes now in operation*. Thus, "classic uniformitarianism was put forward by Lyell", but it was received "against a background of catastrophism" (Ruse 1999, p37).

Uniformity had become recognised as "a principle founded on three distinct elements: a reasoning back from the present, a claim that past geological processes have taken place with the slowness and intensity as at present and a concept of the Earth existing in a balanced steady-state:" (Young 1992, p104). Understood in this way, it is clear that Lyell's application of analogy to geological strata gave no credence to the catastrophists' belief in periodic disruption. Further more, his analogy of present day conditions to the biological environments of the past exemplified his wish to "counter the claim that the organic world shows progression from primitive forms up to the most sophisticated organisms" (Ruse 1997, p41). In his view new species replaced extinct ones; there was no progressive development which those who believed in 'design in Nature' held to. Teleology had no place in his theories; there may have been a beginning to all things, but it was irrelevant to uniformity in Nature. It was not long before his *Principles*, together with his reputation, ensured that Lyell had "established uniformitarianism among geologists and palaeontologists" (Hull 1973. p152). However, acknowledgement of its value to biology came later from 'evolutionists', notably Darwin and co-believer in natural selection, A.R. Wallace. Darwin was particularly glad to have evidence for a very long span of time for evolutionary changes to have taken place and, in retrospect, wrote "I have always thought that the great merit of the *Principles* was that it altered the whole tone of one's mind" (Darwin in White and Gribbin 1995, p97). Wallace was "deeply impressed by Sir Charles Lyell's immortal *Principles of Geology*, which has taught me that the inorganic world … [has] been in a continual state of slow modification …[and] that the forms of life must have become continually adjusted … in order to survive" (Darwin and Wallace 1858 and 1985, p8).

Opposition came mainly from the 'conservative' school, where allegiance to Christian doctrine had to be maintained. Buckland, a brilliant geologist, but also an ordained minister, who endeavoured always to "defend geology against the charge that it undermined the credibility of the Bible (Young 1992, p95), could not reconcile Lyell's ideas with Genesis. Sedgwick, also a geologist-clergyman, held firmly to the catastrophists' view of the formations of the Earth's surface as evidence of a series of Divine creations through

intervention and design only understood through Revelation. Darwin, however, was to take the concept of biological events of the past much further than Lyell himself had visualised. Firstly, in the *Origin of Species*, he applied analogy to the principle of evolution: "I should infer from analogy that probably all the organic beings which ever lived on this earth have descended from some one primordial form" (Darwin in Cosslett (ed.) 1984, p105). He then extended the idea to likening the origin of species to the selective breeding of animals – the theory of Natural Selection as the mechanism of the evolution of species. Lyell eventually agreed to the former but never to the latter and it was this disagreement about the way in which species evolved which, for many, formed the centre of controversy between science and religion in the nineteenth century.

The basic idea behind Darwin's breeding analogy was that by selecting a naturally occurring variation, a breeder could produce a permanently different stock. This, he maintained, could take place over a long period of time, under natural conditions, the selection being brought about by changing environmental conditions, the new species having some feature for survival which older species did not have. Scientists were the first to find this reasoning unacceptable. Darwin's observations and data may have made the production of an immutable species possible but there was insufficient evidence for its occurrence in either the present or the past. It was Lyell, who pin-pointed the weakness of his proposition; it lay in the mechanism whereby features, naturally selected, could be inherited by their offspring: "What is this variety-making power? That is the question" (Lyle in Wilson (ed.) 1970, p ix). He himself could not give an answer to this in relation to his own idea of new species arising as old ones became extinct, but he did not attempt to: it was all part of the harmony of nature that Natural Theology set such store by; it was also, it seems, compatible with the ideals of his Unitarian Church. His religious views clearly influenced his rejection of the notions of natural selection, most particularly in relation to the origin of the human species. His fear was that if he agreed that natural selection was responsible for the origin of species this would have to apply also to humans: if this was so, the dignity of the human race would be in jeopardy. Orthodox Christians viewed the acceptance of the origin of mankind by natural selection with equal seriousness; it would put human moral values in jeopardy. Frederick Temple, a cleric allied to the broad church outlook, who was a supporter of Darwinism, drew attention to the 'enormous gap' existing between the nature of Man and that of all other creatures, declared that, though Man's nature is subject to evolutionary laws, these do not touch the 'spiritual faculty' or the Moral Law: "it is

impossible to evolve Moral Law out of anything but itself": "Moral Law … cannot come out of any development of human nature" (Temple in Cockshut (Ed.) 1966, pp260-261). For him, science did not conflict here with faith, since Revelation gave spiritual truth and science the truth about the physical world. There was, however, one aspect of Natural Selection which, for some, was inconsistent with the doctrine of mankind being made in the Divine image. This was the role of 'advantage' given through the survival of the fittest: the idea of the human species reaching its superior position in the way Darwin had suggested, was ethically unacceptable. At any rate:- "The idea that evolution is just nature's way of capitalising on chance variation seems to border on the insulting, especially if applied to the evolution of humans" (Corballis 1991, p11).

In his funeral sermon on Sir Charles Lyell, A.P. Stanley said of him, "Science and Religion for him not only were not divorced but were one and indivisible" (Stanley in Cockshutt, A.O.J. (ed.) 1966, p250). Perhaps this accounts for his holding a position somewhere between the main schools of thought regarding the issues of conflict in his nineteenth century Britain. He himself wrote in his journal, "If … we discover much that is irreconcilable with all the popular creeds … it will not shake … a belief in … the intelligence, order and benevolence of the Deity … [and] it cannot lessen our idea of the dignity of our race" (Lyell in Wilson (ed.) 1970, p1). For all his uncertainty about the evolution of the human species, he was in no doubt about human uniqueness. What kept the human race separate from all other creatures was the possession of a dignity which the benevolence of God alone provided. Others, varying in their convictions, scientific and religious, seem to have echoed his sentiments in their own way. Cuvier, known personally to many of the British academics, though never accepting the theories of evolution, was a Protestant Christian who made his equivocal view known: "There is only one genus of man" he said, and "this genus is unique" (Moulton and Schiffers 1960, p253). Wallace, a believer in Spiritualism, gave Darwinism the credit for human uniqueness: "the Darwinian theory lends decided support to a belief in the spiritual nature of man" (Wallace 1889, p478) not possessed by any other creature. In spite of not knowing "how the first human soul was made", the orthodox Frederick Temple was certain that "we know that we are, in a sense in which no other creatures living with us are, the children of His special care" (Temple in White and Gribbin, 1995, p179). Each of these clearly considered opinions, whether of a scientist with a Christian faith or a theologian with scientific understanding, assert their confidence in the uniqueness of mankind, relating it to the moral and spiritual nature characterising the

human species regardless of position held in the evolutionary picture of organic life. Darwin himself was ambivalent . As Barbour suggests, he held that the process by which evolution had occurred was itself designed by God (Barbour 2002, p2). This observation is it seems, reflected by Darwin in the conclusion to his O*rigin of Species*: "When I view all beings not as special creations but as the lineal descendants of some few beings ... they seem to me to become enabled." (Darwin 1859 and 1998, p368). For a clearly agnostic outlook from an evolutionist well able to reveal and argue controversial issue with theology, Thomas Huxley's views will be examined.

Thomas Huxley

Thomas Henry Huxley (1825-1885), renowned as a "highly competent zoologist" (Young 1992, p239) and "great anatomist" (Lack 1961, p13), became eminent through a background quite different from Lyell, his friend and fellow-worker on fossil data, Darwin, whose 'champion' he became and Wilberforce, his sparring-partner in the Great Debate. He was the son of a school teacher, through a scholarship graduating in medicine at the Charing Cross Medical School where he "walked away with the year's gold medal" (White and Gribbin 1995, p179). Joining the Navy in 1846 gave him the chance to study marine invertebrates in their natural habitats, recording his findings and sending professional papers back to colleagues in England. After four years he "returned to find his work had brought him professional recognition" (Ruse 1997, p138). With no private means or willing benefactor, his struggle to maintain this reputation amongst other scientists, was helped by his being appointed as lecturer in natural history at the Royal School of Mines and naturalist to the Geological Society, giving him not only a modest income but a status amongst scientists, both academic and amateur. He co-operated with a group of influential scientists in founding the X-Club which set out to be instrumental in directing the progress of scientific thought through such bodies as the Royal Society as well as providing lectures and publications for the increasing number of the general public with a keenness to learn. Huxley was not only talented intellectually but a gifted speaker and skilled writer, expressing with elegance and simplicity his wide knowledge, its correct interpretation and its application to the life of people in all walks of life. In this role he became a highly prized contributor to such journals as *Fortnightly* and *Nineteenth Century*, earning him the comment, "Mr Huxley often speaks without being reported, yet editors of periodicals … will pay him anything to write for them" (Cantor et al 2004, p177).

There were three main aims in Huxley's mind. The first was to make available to the academic world and the public at large, Darwin's findings and his understanding of them and this met with approval. The second was to express his own views in the established scientific setting and here he aroused both support and disagreement. The third was controversial; it was to rid academic science of the domination by clergy. To see Huxley as representing the extreme view of his time in the relationship of biological science with Christian theology, these three elements have to be taken into consideration. Put together, they reflect his seeing the need for a transformation of old concepts, the making way for new trends of thought and for a brighter vision of the future. This would be a struggle, but with a purpose, as his own words make clear: "to promote the increase of natural knowledge and to forward the application of scientific investigation to all the problems of life … to the popularising of science; to education; to the endless skirmishes over evolution; and to the untiring opposition to … that clericalism which, in England, … is the deadly enemy of science" (Huxley T.H. In Cosslett (Ed.) 1984, p146). Stumbling blocks to his progress rose up in response to the challenges he threw out to established concepts, both within science and outside it. The concept of evolution – the evolution of one species of living creatures from another – was, of all, the greatest source of controversy, conflict reaching its height in relation to the human species, to mankind, a principal concern of both science and non-science. It has been said of Huxley that he showed sentiments which "might have been expected from Ruskin and Arnold … that science is integral with culture and enriches life" (Helmstadter and Lightman 1990, p144). Nevertheless, the view from non-science was that, if the science of evolution should diminish the dignity of man or that his thoughts were akin to those of animals with a similar sized brain, arguments must be put forward and evidence produced. Theology also rose to the challenge: if the theory of the evolution of Man seemed incompatible with Biblical 'special creations', the two could with care be reconciled, but the human mind's ability to form a judgement of good and evil was the prerogative of the soul – unquestionably a gift of God.

In 1863, four years after Darwin completed *The Origin of Species by Natural Selection*, Huxley's *Evidence as to Man's Place in Nature* was published. It proved to be a truly scientific book, but one written with elegance, yet simplicity of style that made it readily understood by all who read it. Within it can be found the essential features of the views he held which some agreed with, some found controversial and some opposed. Without

preamble, the first words of the section headed The Relations of Man to the Lower Animals, go directly to what, for him, lay at the heart of the disagreements, arguments and conflict.

"The question of questions for mankind – the problem which underlies all others, and is more deeply interesting than any other – is the ascertainment of the place which Man occupies in nature and of his relations to the universe of things", for "most of us, shrinking from difficulties … tend to ignore [the riddles] altogether or to smother [them] under the feather-bed of … respected tradition … or propound solutions which grow into systems of Theology" (Huxley T.H. 1863, p57).

His own solution depended upon the human mind's need for and ability to cast off the old ways and enter into the progress of new knowledge. He proposed to unfold his arguments, setting them forth "in a form intelligible to those who possess no special acquaintance with anatomical science" (Huxley T.H. 1863, p59), and having a bearing on hypotheses respecting the origin of man. The topics for his investigations consisted of the comparative anatomy of primate skulls, jaws and brains and those of human races including the recently discovered Neanderthal fossils. By using selected and named examples, he carefully drew up a series of comparisons derived from information in these categories. His purpose was not to bring out similarities and variation in differences as in conventional classification, but to show the extent of variation within a group with basic similarities. In this way, he was able to show the extent of the differences within the primate groups of lemur, monkey and ape and then compare this extent with the extent of differences between man and the nearest primate relative. His conclusion to this novel exercise, though guarded, was that "if man be separated by no greater structural barrier from the brutes than they are from one another – then it seems to follow that if any process of physical causation can be discovered by which … ordinary animals have been produced, that process is amply sufficient to account for the origin of man" (Huxley T.H. 1863, p105). At this point he prepared his readers for 'difficult ground' by bringing into the discussion the term 'causation' – familiar to scientists and theologians alike in relation to 'origins' – being careful, though, to define his meaning as 'physical causation': "At the present moment but one [such] process of physical causation … one hypothesis regarding Origin of Species … which has any scientific existence – that propounded by Mr Darwin" (Huxley T.H. 1863, p106). However, his acceptance of it had to be provisional so long as 'one link in the chain

of evidence is wanting': he felt strongly that there was an element of evidence that was missing and that was the means whereby one species could give rise to another. Darwin believed that natural selection was the means; for Huxley, to base such faith in what could emerge from experiments of cattle breeders or bird fanciers was unscientific – both inadequate and untested.

Setting this proviso aside and considering those scientists who were unwilling, through the convictions of their faith, to commit themselves to evolution as a cause, he suggested an alternative. Since the understanding of the science of evolution within the universe provided such a complete argument against intervention and that there was such a closeness of man to all other life, "I can see no excuse for doubting that all are co-ordinated terms of Nature's great progression, from the formless to the formed – from inorganic to organic – from blind force to conscious intellect and will" (Huxley T.H. 1863, p108). It was the function of science to enunciate truth. He then extended his explanations further for the sake of the 'wider circle of the intelligent public'. The two objections to be faced were, on the one hand the questioning of the dignity of man – the unique species – and on the other the undermining of the belief in the inability of humans to progress in intellect sufficient to establish themselves above all other creatures by virtue of a nobler status. The outcome of his work had left him in no doubt about the former; the evolution of the human species was irrelevant to the dignity of the human race – the fact of similarities between groups may indicate a shared origin but the extent of their differences establishes their uniqueness. In making his own emphatic declaration he was, perhaps, balancing his view with Frederick Temple's: "No one is more strongly convinced than I am of the vastness of the gulf between civilised man and the brutes; or is more certain that whether *from* them or not, he is assuredly not *of* them. No one is less disposed to think lightly of the present dignity of the only consciously intelligent denizen of the world" (Temple in Huxley T.H. 1863, p110). Again, possibly coming into line with Lyell, he was providing a vision of the 'nobility of manhood' whose structure and substance is shared with the lower orders but, by possessing intelligible speech, experience had accumulated and been organised, which set him above all others, "transfigured … from his grosser nature by reflecting … a ray, from the infinite source of truth" (Huxley T.H. 1863, p112).

As far as the place of earlier humans in his scheme of organisation was concerned, he was uncertain. Through limited knowledge and restricted availability of such fossil remains as

had been found, he endeavoured to ascertain the position of 'neanderthal' by applying the same exercise of difference between the various races of man and the fossil representative, as he had with man and the primates, but including the factor of the tools used by each. As far as he could determine, there did not seem to be any greater demarcation between the races and the Neanderthal than between the races themselves. To find an ape more anthropoid or a man more pithecoid, would, in his opinion, require the researches of some 'unborn paleontologist'. On these grounds and in spite of the Neanderthal being considered by some, at that time, as a separate *Homo* species, he suggested the status as an early savage *Homo* sapiens.

The extreme position that Huxley sought to promote had, thus, two perspectives: his insistence that biological science should be truly scientific provided one and his determination that religion should in no way interfere with it was the other. He quarrelled with scientists when he observed a hypothesis being based on poor evidence, or the expression of untrue statements of fact or the erroneous interpretation of facts. Though antagonistic towards Christian doctrine, his quarrel was not with the scriptures underlying them, which he recommended as appropriate in school curricula, but for the threat from theology to the progress of science by way of interference. He objected to the authority of the Church over university science and scientific societies; to the hampering of freedom of thought by doctrinal insistence; to the denial of the ability of humans to determine a moral code through the culture of social life … and he felt that agnosticism should be recognised as reasonable for the intellectual man.

The bold statement made in his *Man's Place in Nature*, quoted above, leaves no doubt as to his certainty to human uniqueness, embellished by his picture of the noble status of mankind (Huxley T.H. 1863, p79 & pp139-147). The conflict for him was over the issue of how that uniqueness had come about (Huxley T.H. 1863, p159): natural causes, still substantially unknown, gave a reasonable answer, Divine intervention did not.

At the meeting of the British Association for the Advancement of Science at Oxford in 1860, when Darwin's recently published *Origin of Species* was being discussed at length, an encounter took place between Huxley and Bishop Wilberforce which became famous in the role of 'the Great Debate'. No full account of this confrontation exists, but one who was present at the meeting (John Green) wrote what he recalled as significant in Huxley's words

in response to the Bishop's query about the nature of his descent from a lower primate, where he declared that a man had no reason to be ashamed of having an ape for a grandfather, and it would be better than a man who plunged into scientific questions with which he had no real acquaintance. Whilst the outcome of the skirmish was that "the new theories secured a hearing, all the wider … for the startling nature of their defence" (Cosslett 1984, p155), it was of no great significance to Huxley himself, except that, as he wrote to his son, it "changed my opinion as to the value of the art of public speaking" (Huxley T.H. in Cosslett 1984, p154). The confrontation was of no greater importance to Wilberforce: he was following the practice of the Church in maintaining the authority of Christian doctrine over secularism, including scientific advancement, in the exercise of which he was to spend his whole life.

Samuel Wilberforce

Samuel Wilberforce grew up in a well-to-do, secure and interesting family. His father William Wilberforce M.P., a Yorkshireman living, for the sake of his parliamentary work, mainly in London and the Sussex countryside, provided a background for his children of persuasion which shone forth in both parliamentary concerns [particularly the anti-slave-trade measures for which he is renowned] and in the setting of his home. Samuel and his siblings had, thus, a social life of great variety but with the domestic framework of a disciplined Christian faith which necessitated daily prayer and bible study and behaviour in keeping with repentance and dedication. For fear that a Public School education might not encourage these precepts, William sent his sons to be tutored privately in the homes of teachers with a faith like his own. It was not until entering Oriel College, Oxford, that, though in the care of evangelical tutors, he encountered young men with religious views quite different from his own – Arnold, Newman and Pusey, for example, with strong high-church convictions, together with Protestant reformers, actively championing biblical criticism. Whilst enjoying a social life shared with lively intellectuals and through his own "personal charm, energy and zeal" (Lack 1961, p13), he chose as his close friends those who were quiet in behaviour, studious and like-minded. Certain characteristics of importance to him regarding his future career, began to take shape in his undergraduate years. Firstly, whilst being well able to cope with his studies for a degree in mathematics, he did not show the promise of his elder brother as a scholar, but he did develop a range of interests, in particular, all aspects of natural history. A talent which came to light at this

time, through taking part in Union debates, was an aptitude for public speaking. Not being involved in philosophically deep studies, he learned the art of assessing complex situations with clarity and speed.

These qualities were to be constantly drawn upon in the administration of his vocation, for, at the age of 22 years, Samuel Wilberforce was ordained and appointed to a rural curacy. Here he was to have to adapt his ideas to the particular needs of those under his care – not only their welfare but, as his calling demanded, the "commission to prepare them for eternity" (Meacham 1970, p25). Later he would pass this on as advice to young ordinands: "Never allow yourselves to think of them as 'the people'; remember they are souls; each one has a soul" (Wilberforce in Meacham 1970, p25). After two years, through the benevolence of his father's cousin, Bishop Sumner, he became the rector of a large parish on the Isle of Wight, with wide responsibilities, earning him, at 25 years of age, a reputation for being "a hard working and efficient clergyman" (Meacham 1970, p34) and offers of preferment from bishops of other sees. Here he became involved in local politics; confronted with active disruption from dissidents, he took it upon himself to reorganise the parish into a Church of England community, raising funds for schools and taking up local issues of concern. At the same time, he was visiting London, meeting with clergy friends and making connections through preaching and attending meetings of religious societies besides travelling around to hear all the sermons he could. As Archdeacon of Surrey his responsibilities extended into south London and thus the differing problems of city churches. It was in this field that he began to show his commitment to the exercise of authority, as his biographer, Meacham, observes in relation to a quite trivial difference of opinion with a vestry-man: "Both clergy and laymen were occasionally startled by his readiness to prosecute his duties", quoting from correspondence with the parish priest, in justification of his stance, "He (an archdeacon) makes an order … and that order he can, if necessary enforce, by motion, citation or other processes of his court" (Meacham 1970, p40).

During the 1840's Wilberforce gained the interest of the Queen and Prince Albert and also of the Prime Minister. The Prince made him a royal chaplain and, in 1845, "Peel (Prime Minister) … did not hesitate to suggest his name when the Deanery of Westminster became vacant" (Meacham 1970, p43). He was, by his own admission, gratified and perhaps flattered to be recognised by those whose concern was for the Nation's wellbeing, both

through religion and secularly. He was also conscious of the value, for him, of being in a position to put forward his ideas about matters of the Church and State, the established status and authority of the Church of England being of particular concern at that time.

On becoming Bishop of Oxford, before he was 40, his energy and zeal were to be fully exploited. It was widely known that the diocese had suffered, under the retiring bishop, from an on-going Tractarian controversy, with regard to which Wilberforce had taken a 'middle' view. This was, no doubt in his favour, but Peel's purpose, in offering him the see, was "to place on the Bench the divine best entitled by professional character and merit to preferment" (Meacham 1970, p47). Whilst, in his letter of acceptance he declared his desire to be "enabled to discharge the high and important duties" (Meacham 1970, p47) which would devolve upon him, his diary reveals his awareness of the perils of worldly life which he would need to guard against in his new role. Secularity was the peril he most feared (Meacham 1970, p97). For him, a secular society was a decaying one, leading eventually to national disaster. This was a theme he had discussed with the young William Gladstone as far back as the 1830's, a concern which may well have become real to him when in rural parishes he had aimed to create a social setting in which the Church was the centre of care and activity (Meacham 1970, pp235-7): civil government needed to support the established Church, to this end. In his diocese he aimed to inspire both clergy and the ordinands of the college he had founded at Cuddesdon with the same endeavour (Meacham 1970, p108). The Church's ministers, from the priest in his parish to the bishop on the Bench, bore a duty to engage in this, exercising the authority which was theirs. His diary predicts just how demanding this was going to be for him, requiring prayer, self-restraint and diligence in forming a just opinion and wisdom when praising or blaming (Meacham 1970, p97).

On the day of the notorious Oxford meeting of the British Association for the Advancement of Science, Bishop Wilberforce was, clearly, putting into action the first of his resolves – to demonstrate the Church's authority in a secular situation. Whether he applied his private resolves remains questionable, but Huxley's comment is worth quoting in this context: "In justice to the Bishop, I am bound to say he bore me no malice, but was always courtesy itself when we occasionally met in after years" (Huxley T.H. in Cosslett 1984, p154). A generally accepted view of the 'Great Debate' is that as a verbal battle between Darwin's supporters and his disclaimers" (White and Gribbin 1995, p221), it was the first serious,

open and publicised confrontation between scientist-theologians and professional scientists regarding the origin of mankind. Up to this time, this had been the province of theology jealously guarded by biblical truth; it was now being invaded by science, through unestablished theories. It was, by its organisation, a scientific meeting, supported by a strong representation of academic science, some critical of Darwin, with others supporting his theory completely. "A gallery of famous Victorians" (Cosslett 1984, p147) had gathered there: Henslow (Professor of Botany), Owen (anatomist-palaeontologist), Hooker (botanist Director of Kew) and also Sir John Lubbock (anthropologist, applying evolution to palaeontology). But the accommodation had to be extended to hold the great number of clergy and students crowding in to hear how theology would stand up to the challenge of science in the hands of the Bishop of Oxford. Wilberforce, speaking as a Vice-President of the Association, was closely concerned with the issues under discussion, having prepared a review of *Origin of Species* for the current issue of the *Quarterly Review*. There is no written record of the speech but it seems clear that the ideas given in the review were being put forward. His arguments were scientific; his ridicule of Darwin's work was that it was not. In his defence, it has been said that "Wilberforce … was not as narrow minded as legend has taken him to be" judging by his words in the review "we have objected … solely on scientific grounds … We have no sympathy with those who object to any facts … in nature because they believe them to contradict what appears to them to be taught by Revelation" (Drees 1996, pp169-170). Nevertheless, on the platform he was undoubtedly demonstrating, in his own particular style, the authority of the Church, through its ministers, over secular activity, especially where it was inferior and damaging to society. What did not come across to those assembled was his acceptance of the idea of one species evolving from another; he even acknowledged a role for natural selection, but he "forcibly argued that it could not account for man's peculiar moral and spiritual condition" (Lack 1961, p14).

From neither the scientific nor the theological point of view was the exchange of views between Huxley and Wilberforce of any real value, but, taking place as it did before some 700 eager listeners, and being reported widely in the press, it unquestionably set the discussion going in general and in intellectual situations alike. In so doing, it led the way to the separation of science from theology and exposed the Church to a challenge from science of lasting importance.

Wilberforce's certainty of the uniqueness of the human species is made clear, but for him,

this was through the mind endowed with a moral and spiritual condition. The controversial issue relates thus not to the origin of the species, but to the origin of such a mind (Lack 1961, p64). The conclusion that Temple, later to become Archbishop of Canterbury, drew from contemporary biological science, was very much in line with this concept (Lack 1961, p265). How far Wilberforce's outlook was representative of nineteenth century Protestant doctrine reflected in the stance taken by the Church, has to be considered in the light of the distinct sections which had grown up in the Established Church around the interpretation of doctrines then being challenged. The Broad Church represented intellectuals broad-mindedly questioning the traditions undergoing criticism from current scholarship – scientific as well as historical. The High Church, fearing this freedom, stressed the need to reassure the 'doubting' Christians through revising traditions and reforming the doctrinal foundations. The Evangelical Church, fearing the laxity of a broad outlook, emphasised the foundational requirements of personal faith, mission and care of souls. The stance that Wilberforce took up can be seen to be a blend of all three. Evangelicalism lay at the heart of his faith, his support for the discipline of the traditionalists was reflected in his aim to maintain the Church's authority and, being wary of intellectual freedom, he chose to reserve judgement over Broad Church pronouncements.

Theology's defence

It has to be remembered that reactions to the notion of 'evolution' not only of the universe and living creatures but of human beings, did not have Darwin's *Origin of Species* as a starting point. Ideas had been put forward in earlier times (Barbour 1998, pp50-51), but with the pronouncements from scientists that there was evidence for a theory, reactions amounting to controversy between 'science and religion' took fire (Chadwick 1980, p3). The reaction from the Protestant churches may be seen to have been 'sparked off' by a fear of what the acknowledgement of such a theory might mean for the faith of Christians. Nevertheless, by the 1870s its acceptance "among educated Christians, while far from universal, was both permissible and respectable" (Chadwick 1980, p24). Whilst many would reject extending the theory to include humans, it became reasonable to consider evolution and Christian doctrine to be compatible (Chadwick 1980, p24). The issues involved, however, were not straightforward. In analysing what contributed to this outlook, other elements of academic thought of the time have to be borne in mind. Of these, historical criticism, prevalent in Europe, was of prime importance and the struggle

for academic disciplines to be freed from theological authority an adjunct: both of these stimulated a "growing sense of conflict between faith and reason" (Chadwick 1980, p5). The issues arousing conflict were thus not only the origin and status of humanity, but the truth of the Biblical accounts; not only the challenge to ideas of purpose and design in creation, but the authority of the Scriptures as an answer; not only the scientific evidence for a theory of evolution, but the possibility of its being ethically acceptable in terms of Christian doctrine (Barbour 1998, p49).

The Protestant response to these challenges, though varied and changing with time, had by the 1880s, been resolved along three possible lines: one of outright rejection of evolution and retention of traditional doctrines, one of deliberate modification of doctrine in the light of the science of evolution and one of a middle way between the two (Barbour 1998, pp63-64).

Within the Church of England traditional views were strong in both the High Church and the Evangelical, though expressed in their different ways: for each, to show doubt when scientific theory was set against Christian doctrine was not to be tolerated. Critical inquiry, not wrong in itself, if undertaken reverently would give rise to right judgements (Crowther 1970, p33). Amongst these Anglicans, however, were the 'Broadchurchmen' who felt that the Church of England was strong enough to withstand criticism, whether it be of the Bible, the authority of the Church or its doctrines. In matters concerning humanity, the value of the New Testament as a moral guide and for spiritual revelation "would arise unspotted from all objectives that could be fairly levelled at it" (Crowther 1970, p32), Darwinism included. Those wishing to modify traditional beliefs were representatives of extreme views, not denying God's authority through the Bible and Revelation, but discerning His immanence through creation, in Nature and in humanity: evolution was God's way of bringing this to fruition and giving His practical 'spark of God' to individual human beings (Chadwick 1980, p29). Such was the extent of Traditionalism, Liberalism and Modernism in the Anglican Church.

Variation was prevalent in a similar way in the Non-Conformist Churches. "Congregationalist in particular were marked by increasing liberalism from the 1870s onwards" (McLeod 1996, p190); Methodism, where, in the earlier part of the century the evangelical message was straightforward, found the attacks on Biblical truth and belief a

complication for preachers and missionaries (McLeod 1996, p193).

It was, therefore, as much internal controversies that Darwinism contributed to as conflict between the theology of the Protestant Churches and the science of the academic biologists. Much depended upon what view was held about tradition and its relation to scripture as the authority. It was becoming clear that, in the wake of advancing scholarship and knowledge, particularly through science, scripture had need of interpretation, but not under the control of tradition. (Williams in Webster J., Tanner, K., Torrance, I. (eds.) 2007, p365). With the consolidation of the discipline of archaeology through the advancement of palaeontology in the next century, the need for further interpretation of scripture could be anticipated, together with a greater readiness to modify established traditions. Once again the accepted explanation of the uniqueness of humanity was in question: just as the 'reasoning' mind had questioned the God-given moral soul and the 'evolved' human mind had left no room for the divine endowment of morality, so the prospect of ultimate perfectibility of the human intellect over time would conflict with the Christian notion of the need for divinely revealed wisdom for the perfecting of human nature.

CHAPTER III: THE BEGINNING OF THE INFLUENCE OF ARCHAEOLOGY

Throughout the nineteenth century the notion of one species having evolved from another being applied, by its supporters, to humanity was, as has been shown, being opposed by theologians, on the grounds of it questioning the authority of Christian doctrine. But there was growing support for the concept from geological knowledge being applied to the contemporary keenness for palaeontology and gaining ground from the spread of interest through the publication of Lyell's *Principles*.

The importance of the pioneering work of Lubbock to the development of a scientific view of humanity

There is a name which occurs throughout the documentation of scientific development in the latter part of the nineteenth century and its conflict with Protestant doctrine of the time – it is that of John Lubbock, Sir John after his father's death and Lord Avebury later in his life. It has been noted that he was present at the 1860 Oxford meeting of the BAAS with its Great Debate on Darwin's *Origin of Species* and his name will be found amongst the eminent Fellows of the Royal Society, the Geological, Zoological and Entomological Societies. He lectured widely and wrote extensively on natural history and anthropology and his books and articles were read and acknowledged for their excellence. His first 'best seller', published originally six years after the *Origin*, and for which he is most renowned is his *Prehistoric Times*. In this book that took up the new science of geology and applied it to archaeology in order, as he himself put it in his introduction, "to throw light on the history of man in prehistoric times", archaeology forming, in fact "the link between geology and history" (Lubbock in Hutchinson 1914, vol.1 p2). With a 7th edition being published in 1913, together with his biography by Hutchinson in 1915, it provides a perspective of the trends of thought concerning humankind, emerging from the nineteenth century challenges to tradition and to the association of archaeology with science, in the century to come. It is probably his association with scientists and those who supported Darwin in particular, that his views were considered contrary to theological tradition.

There are, however, good reasons for questioning the value of John Lubbock as a leader in the radical changes of outlook in the challenging issues of science for the theology of the time, as a glance at his background will show. Born in 1834 into a well-to-do family of City

bankers, John was the eldest of a large family. Always thoughtful and questioning, he developed, at an early age, strong religious views and a taste for natural history, aiming by the first to "have more strength to be a good boy" (Lubbock in Hutchinson 1914, vol. 1 p9) and by the second to rectify the neglect of science in his Eton education through "devoting a good deal (of leisure time) to Natural History and Geology in spite of the remonstrances of my Tutor", as memoirs recall (Lubbock in Hutchinson 1914, vol. 1 p17). Clearly the fixed school curriculum of Latin and Greek did not suit him, though it was expected of him that he would become a scholar. In the event this was not to be, for at the age of fourteen, his father having need of him in the family business, he was removed from the College to begin a life-time career in the City. With so short and limited an education and the burden of long days of responsible work and travel, it is amazing that he could extend his interest in biology and geology with several hours daily of reading and study. However, in notes that he made at the time, he records that "In 1850 (aged 16) I gave my first lecture. It was at Down on the Wireworm … My first scientific original work … appeared in the Natural History Magazine for January 1853. In 1854 … [I] joined the Geological Society … and [in 1857] was elected a member of the Royal Society." (Lubbock in Hutchinson 1914, vol. 1 pp23-24). He also made mention of the people he had met, amongst them Lyell and Hooker, Kingsley, John Evans and Huxley, and most particularly, Charles Darwin who had invited him to do drawings for some of his books.

Judging by the letters quoted in his biography these friendships were life-long, the correspondence between them reflecting mutual high regard and a recognition of the value of his contribution to their specialist knowledge, Lyell writing "I am glad to hear of more fossil bones being found at Green Strat Green" (Hutchinson 1914, vol. 1 p37), Huxley thanking him for knowledge of "the wide occurrence of vitellagenous glands in insects", he himself being "quite unaware they had been discovered" (Hutchinson 1914, vol. 1 p44) and Darwin seeking his views on an aspect of his theory – "If you ever arrive at any definite conclusion … for Pangenesis, I should very much like to hear." (Hutchinson 1914, vol. 1 p49). Such recognition provides good reason for estimating highly the significance of his writings to the advancement of the scientific side of archaeology.

He was, as he progressed in his work of business and finance and also later on as an MP, becoming highly regarded outside the world of science, his books being widely read and discussed in Britain and overseas. His ideas were thus brought to the attention of many in

public life and engaged him in correspondence on his book about ants, bees and wasps with the Princess of Wales (Hutchinson 1914, vol. 1 pp57-58), on the origin of the human race with the Duke of Argyll (Hutchinson 1914, vol. 1 p298) and the relations between science and religion with the Archbishop of Canterbury (Hutchinson 1914, vol. 1 p183).

The importance of his own beliefs and the faith by which he lived, though by Lubbock himself not readily discussed (Hutchinson 1914, vol. 1 p187), has to be taken into account where relevant to controversy between the new science and traditional Christianity. His biographer, H.H. Hutchinson, says of him , in relation to the extreme materialism of the time, "though many of his best friends were among the extremists (he was) surprisingly moderate in his attitude." (Hutchinson 1914, vol. 1 pp186-187). Certainly he regularly attended church services on Sundays and (the biographer was told) read a chapter of the Bible daily before commencing the day's work. The latter part of *Prehistoric Times* throws light on the significance of this and will be discussed in that context.

Thus, though he was a self-taught amateur archaeological scientist and in spite of his being intensely occupied with business and politics, the knowledge of the early history of mankind, at the turn of the century, is considered to have been fairly put forward by him as are the moderate views of its religious significance which he expressed.

Archaeology's view of Lubbock's work should particularly be considered, his contribution to twentieth century advancement being recognised in retrospect. Considering the establishment of the antiquity of humankind to have been an essential part of the nineteenth century intellectual development of archaeology, Renfrew and Bahn stress the importance of the association of human artefacts with the bones of extinct animals, such as was observed by John Evans and Joseph Prestwich and link their findings with Lubbock's *Prehistoric Times* (Renfrew and Bahn 2004, p24). Lubbock had been associated with Evans and Prestwich since 1854 and had joined them on an expedition to the Somme when "Lubbock had enjoyed a pleasant and instructive trip … with Sir J Prestwich … going in his company to the gravels of the Somme Valley." (Hutchinson 1914, vol 1. p51). This event has a place also in Gamble's historical background to prehistory in Europe through its giving archaeological validity to flaked-stone tool making (Gamble in Cunliffe (Ed.) 1998, p9). Lubbock is, further more, given credit also for the use of the term 'prehistory' (Renfrew and Bahn 2004, p24) and, as Lewis-Williams points out, he sub-divided the Stone Age into

Palaeolithic and Neolithic (Lewis-Williams 2002, p24), which formed the basis for further sub-division later on (Cunliffe 1998, p11).

As a scientific archaeological link between the two centuries, Lubbock's survey of prehistory provides both evidence for human antiquity and an interpretation, as far as was possible at the time. The evidence was in the form of artefacts and human fossil remains, these being considered in conjunction with their geological position and in relation to associated animal and plant remains the presence of extinct species implying great antiquity. The interpretation depended upon an estimation of age through attempts at dating by way of geology and palaeontology together with the application of ethology through knowledge of extant savage customs.

Lubbock, clearly, had in mind in writing *Prehistoric Times* the need to provide an answer to archaeology's scepticism of the current interpretation of recorded findings, particularly the stone tools of Europe and America. The very existence of a Stone Age "has, till lately, been denied by some eminent archaeologists." (Lubbock 1913, p75) was his complaint to which he added his disdain for the Ethnology Society's view that "there may have been a period when society was in so barbarous a state that sticks and stones were the only implements with which men knew how to furnish themselves", doubting if "the antiquary has yet found any evidence of such a period." (Lubbock 1913, p75). Agreeing with the barbarous use of sticks and stones (to which he added horns and bones) as men's only tools he, nevertheless, stated dogmatically that "the antiquary has found clear evidence of such a period" (Lubbock 1913, p76), this evidence for Neolithic (late Stone Age) coming principally from four sources; tumuli, shell mounds, lake-habitations and bone-caves (Lubbock 1913, p76).

He discussed in great detail collections of Neolithic flint tools together with evidence not only of areas where suitable stone appeared to have been obtained via deep shafts, but also of skilful fashioning by flaking and polishing (Lubbock 1913, p79). Always at pains to indicate how artefacts could be related to practices observed amongst primitive people of the time, he pointed out that "saws, awls and arrowheads" had been worked up much as "savages use flint or chert … even at the present day, and Mexicans, in the time of Cortez, used precisely similar fragments of obsidian." (Lubbock 1913, p82). Artefacts, particularly where associated with enclosures, were, he thought, of great significance, here illustrating

his point with detailed accounts of documented remains in America (Lubbock 1913, pp260-261), the 'tens of thousands' of sepulchral mounds found in the central parts of the United States providing ample evidence of stone implements, with other artefacts, having been buried with a corpse (Lubbock 1913, pp264-265. However, where necessary, Lubbock was careful to reveal archaeological misconceptions, as he did with the identification of human remains, at a particular mound, which "turned out to be an error" (Lubbock 1913, p265). For him, the antiquity of remains was verified by being accompanied by bones of extinct mammals and, where this was not so, he said as much: "No remains of the mastodon, or indeed of any extinct animals, have been found in any of the American burial mounds." (Lubbock 1913, p265). Cave researches, though providing much evidence of both Neolithic and Palaeolithic activity, had always to be judged with caution. Whilst many contained bones of both humans and extinct animals, their existing there during the same period had to be questioned on account of disturbances by water, earth movements or animal activity (Lubbock 1913, pp308-309).

Fascinating details are given in this context of new discoveries in Belgium and France as well as in Britain together with new means of verifying their antiquity by way of a study of broken bones and their chemical composition. Where various mammal remains were found in association with human ones, the interpretation was made along these lines: "That the rhinoceros … was contemporaneous with man is inferred … firstly on chemical grounds, the bones of this species … having retained the same amount of nitrogen as the human bones from the locality; and secondly, because the bones appear to have been broken by man and in some cases using knives … these bones must have belonged to an individual recently killed, because after having been broken by man, they were gnawed by the hyaenas, which would not have been the case if they had not been fresh and still full of their natural juices." (Lubbock 1913, p316). A great deal of care was necessary in work of this nature, by the collector, regarding the site and position of the remains and Lubbock quoted from his own research at Kent's Cavern in Devon, to illustrate this: even though a variety of mammal bones were procured from beneath a covering of stalagmite, as were certain artefacts, and it seemed as if they all "must have been introduced into the cave before the flooring of stalagmite had been formed" (Lubbock 1913, pp310-311), nevertheless, "confirmation was thought necessary and (was) undertaken by a committee (of the British Association) which included Sir C. Lyell and Sir J. Evans." (Lubbock 1913, p311). Interpretation of a different kind was called upon where the nature of artefacts was

concerned, for, whilst the lack of pottery in the archaic bone-caves pointed to the inhabitants having lived in "a very primitive period" (Lubbock 1913, p326), indications of humannesss were revealed in the representation of snakes and fish, reindeer and mammoths depicted on pieces of horn or stone found in caves, such as those in the Dordogne (Lubbock 1913, pp326-327). His judgement altogether was, as might be expected, that "Although it is natural to feel some surprise at finding these works of art, still there are instances among recent savages of certain skill in drawing and sculpture being accompanied by an entire ignorance of metallurgy. This is particularly the case with the Esquimaux." (Lubbock 1913, p330).

The evidence that was sought but not yet found to any extent, was that of human skulls. "As regards the earliest races of men themselves we have, unfortunately, but little information. For although fragmentary human bones have been frequently found, there are as yet, very few cases on record in which skulls have been obtained in such a condition as to allow restoration, or of which the age is contestable." (Lubbock 1913, p331). Listing the Neanderthal, Cro-Magnon and Chancelade types as the earliest remains found in Northern Europe (Lubbock 1913, p332), he thought, with Thomas Huxley, that the first had "the most pithecoid of human crania yet discovered" (Lubbock 1913, p333), the second possessed "a fair average human skull, which might have belonged to a philosopher, or might have contained the thoughtless brains of a savage" (Lubbock 1913, p334), whilst the third was "beyond doubt an Eskimo" (Lubbock 1913, p335). They were however very different from the *Pithecanthropus* of Java, about which there was doubt as to whether the skull was "that of a man or a monkey" (Lubbock 1913, p337). Other than this the most ape-like "are the remains recently discovered … at Piltdown" (Lubbock 1913, p337), this apparently being not only a different species, but "even to differ generically" (Lubbock 1913, p337).

Out of all this 'evidence', as he considered it, Lubbock drew two conclusions of utmost importance to his outlook on the prehistory of mankind. The first was that the remains so far discovered, though of undoubted antiquity, did not represent the earliest of humans; "there must have been another, and perhaps still longer period in which these varieties were gradually developed". The second was that in relation to each other, animal remains were indicators of the extinction of some species, but not the creation of new ones – "all our existing forms of mammalian were already in existence", and, giving his own strongly

felt view, “it would have been surprising if man alone had been unrepresented” (Lubbock 1913, pp338-339). It is interesting here to note how Lubbock seemed to know 'what he was looking for'. In common with the other anthropologists whom he consulted on all points, he had a preconceived image of early man and a tendency to judge specimens found, on this basis. In the view of Louis Leakey this was the sort of reasoning for the Piltdown skull and jaw, later to be found a forgery, to be accepted so readily as genuine (Leakey 1974, pp22-23). It was, it seems, just what the 'establishment' wanted to find – a combination of an ape-like feature in the jaw and a human-like cranium.

The value of Lubbock’s work may well be considered in the light of his own declared aims. The application of science to archaeology was clearly paramount: it is as a science that he recommended the application of geology (Lubbock 1913, p1), and, even though the knowledge of it was incomplete, this would change in time and “on the whole, the conclusions to which it points are as definite as those of zoology, chemistry or any of the kindred sciences” (Lubbock 1913, p2), was his conviction. In his own research and when passing judgement on the work of others, his use of scientific method is clear to see in the assembling and putting in order the maximum data available, documenting and referencing it (Cunliffe 1998, p6) and interpreting it in relation to human prehistory, where he felt justified. Nevertheless, the difficulties archaeology was faced with, at the time, were considerable. As has been shown in his own observations and accounts of his methods, these were principally the lack of any scientifically based method of dating, the lack of the means of interpreting remains as indications of the way of life of prehistoric human beings and the dirth of complete human skeletons and skulls. For the first, the association with geological strata and extinct animals was generally made use of (Cunliffe 1998, p11), for the second, comparison with living savages was widely employed (Renfrew and Bahn 2004, p27), whilst for the third, anticipation of what might be found stimulated further searching but also some deception and even, as with Piltdown, fraud (Cunliffe 1998, p21 & Renfrew and Bahn 2004, p114). Science may have formed the basis of his archaeology, but there were limitations in its application, as there were to the integrity of those it inspired.

Perhaps the most significant of Lubbock’s feelings about his work is found in his constant expressions of hope for future development. He longed for an increase in knowledge and understanding of mankind in prehistoric times, as is shown, for example, in his concern at the total ignorance about the domestication of animals, there being so little evidence he

could only reflect that "we must be satisfied to wait for further evidence before the question can be decided" (Lubbock 1913, p320).

His wish to have established some clear idea of the earliest geological era where human remains might be expected, was often expressed. Quoting several archaeologists' estimation of human remains (of a 'lowly type') being present in strata of the Pliocene period, he himself held out hopes for earlier origins: "I am disposed to think that in the Miocene Period Man was probably represented by anthropoid apes more nearly resembling us than do any of the existing quadrumana. We need not expect to find the proofs in Europe … it is in the warmer regions of the east that we may reasonably find the earliest traces of the human race."

In a broader view of humanity he extended his hopes into the future of the human race – the future of civilisation. Giving his outlook credence through science, he maintained that with the "force we term the mind" (Lubbock 1913, p583), natural selection makes provision for "unexpected light on the past" and also "illuminates the future with hope" (Lubbock 1913, p584), that hope springing from his belief that "happiness of man is on the increase" (Lubbock 1913, p585). Through civilisation man is freed from the perils of the savage's life and so "with the increasing influence of science, we may confidently look to a great improvement in the condition of man." (Lubbock 1913, p590).

Through such criteria emerge Lubbock's ideas on the critical issues of human uniqueness, conflict between science and Christian doctrine and the reconciling of the new scientific understanding with his own religious faith. In the light of his knowledge of the savage races, together with the manner in which civilisation had transformed human lives, he unhesitatingly assumed "the unity of the human race" (Lubbock 1913, p581). Quoting A.R. Wallace, he sees the human "as a being apart, since he is not influenced by the great laws which irresistibly modify all other organic beings" (Wallace in Lubbock 1913, p584). "The great principle of Natural Selection which in animals affects the body and seems to have little influence on the mind, in Man affects the mind and has little influence on the body" (Wallace in Lubbock 1913, p593), represents his own understanding of human uniqueness. Natural selection, illuminating both the past and the future, gave Lubbock grounds for being surprised "that a theory which … teaches us humility for the past, faith in the present and hope for the future should have been regarded as opposed to the principles of true

religion" (Lubbock 1913, p584). To those who, linking suffering and sorrow with sin, consider that "any moral improvement must be due to religion, and not science", he declared that such a separation of the agents of improvement "is the great misfortune of humanity" on account of its "having done more than anything else to retard the progress of civilisation." (Lubbock 1913, pp590-591).

Reasoning, along these lines, suggests the means whereby he reconciled science with his own faith. Following his renouncement of conflict with an account of what he saw as misapprehensions in religious teaching about sin, temptation, repentance and punishment, he contended that they were all dealt with by "the stern yet salutary teaching of science" (Lubbock 1913, p591). He even went so far as to say that "science will also render man more virtuous" (Lubbock 1913, p592), supporting his view with Lord Brougham's notion of Providence's role as the provider of the great things for which human understanding is fitted (Lubbock 1913, p592). Beyond this he did not commit himself: "It will, I think, be admitted that of the evils under which we suffer, nearly all may be attributed either to ignorance or sin. That ignorance will be diminished by the progress of science is, of course, self-evident; that the same will be the case with sin, seems little less so." (Lubbock 1913, p593). For Lubbock, a devout student of the Bible and regular Church of England worshipper, his science and his faith were entirely compatible: for some believers, however, it was not. His biographer relates how, through publishing *Prehistoric Times* in 1865, just at the time of his contesting the parliamentary seat for Maidstone, "he was handsomely defeated. The majority against him ... was larger than it would have otherwise have been in consequence of the opinions on the Antiquity of Man expressed in his *Prehistoric Times.*" (Hutchinson 1914, p74). Furthermore, even some six years later, in replying to a public lecture given by Lubbock, the Rev. I. B. McCrea voiced his view that science was the cause, science is the cause of degeneracy of man - not the devil but science! (Hutchinson 1914, p75). But there was support from theologians who, like himself, contributed to *Essays and Reviews*, notably Dr Temple, later to become Archbishop of Canterbury, and also Charles Kingsley who wrote to him after reading *Prehistoric Times,* that, whilst the last chapter is "excellent and true" but still "I think there is more to be considered". "I am sure" he wrote "that civilisation does *not* decrease man's inclination to sin" (Kingsley in Hutchinson 1914, p91).

CHAPTER IV: TWENTIETH CENTURY INVOLVEMENT OF THEOLOGY AND SCIENCE IN ASSOCIATION WITH ARCHAEOLOGY IN ESTABLISHING THE NATURE OF HUMAN BEINGS

Although the archaeological work linked with the name of Lubbock was carried out in association with others, nineteenth century ideas on prehistoric Stone Age humanity were only clearly defined with the publication of *Prehistoric Times* in 1913. But the years of the first half of the twentieth century were to see advances, in both biological science and liberal theology, being accompanied by a steady progress in prehistoric archaeology.

The advancement of the disciplines of liberal theology, biological science and prehistoric archaeology in relation to human uniqueness

Introduction

Notwithstanding the difficulties confronting Lubbock and those, with him, anxious to find evidence to strengthen their belief in Darwinism as an explanation, through Natural Selection, of human uniqueness, by the time that *Prehistoric Times* was published, light was already being thrown on the principal areas of nineteenth century ignorance. The first was whether generations of ancestral Man really had existed in the distant past and the second, how modern man could possibly have arisen from them. Archaeology was on the way to establishing the first, whilst microbiology was advancing towards the second. Prominent in these two fields, both in active research and in making the results widely known, were anthropologist Louis Leakey and zoologist Julian Huxley and it is they who, as selected figures for this period, represent the moderate and extreme stand for science in the controversy with theology, at that time. The third figure, chosen to illustrate an extreme viewpoint for theology, is Teilhard de Chardin, an ordained Roman Catholic priest highly qualified in both biology and palaeontology.

Louis Leakey

Though taken here as a representative of the moderate views of his time, Louis Leakey was seen then, and indeed now, as anything but 'moderate', holding highly original ideas which he unhesitatingly made known to all who would listen. Nevertheless, in the context of controversies arising from developing biological theories conflicting with established Protestant doctrine, he may justly be seen as holding to a moderate view, being neither biased scientifically nor theologically prejudiced. He was, in fact, not qualified in biological

science, but combined anthropology and archaeology with the growing sciences of geology and palaeontology. His work was thus primarily concerned with knowledge and theories about the human species – an area of challenge for Christian theology, in the early twentieth century.

Leakey's own background was of a strict evangelical Protestantism (Cole 1975, Ch. 2: Willis 1995, p105) which provided him with the foundations of a firm Christian faith (Leakey L.S.B. 1974, p13 : Cole 1975, p23), though he showed no reticence in attacking his Church's doctrines for the disciplines it imposed (Leakey L.S.B. 1974, p72 : Cole 1975, pp120-121). His own interest and activity was particularly in one aspect of the human sciences, namely the origins of *Homo* sapiens (Cole 1975, p14). Never in any doubt of human uniqueness (Cole 1975, p297), he was convinced of the evolution of all species, including all hominids. So strong was his conviction, that he showed no moderation in attacking the current scientific/archaeological pronouncements and justifying his own (Cole 1975, p407). It is clear, though, that these certainties, which he held throughout his life, were not of themselves in conflict: they were, it seems, a bond for him in his intense concern for humanity (Cole 1975, p13).

As a figure worthy of representing the moderate view, it must be remembered that Leakey was a pioneer: "Louis was a discoverer, and probably he found and named more fossil 'firsts' than any other palaeontologist who ever worked in Africa" (Cole 1975, p16). Though encouraged and supported by earlier workers, what he undertook was new and enterprising (Lewis and Towers. 1970, p31). Furthermore, he had a purpose in all that he did which led him to make every effort to publish and make known his findings, both to academics and the general public: "His finds brought him fame in scientific circles, but his way of talking about them made them – and him – known to a much wider public" (Cole 1975, p21). There were not many engaged in the type of investigation that was to be his life's work. Even the first years of his career, in the 1920s – 1930s, "were a period of exploration and reconnaissance during which he pinpointed most of the sites which were to make him famous" (Cole 1975, p14). He thus shone out as a scientific archaeologist revealing a prehistory of mankind, hitherto unknown. In spite of the fierce criticism he provoked, he was given great acclaim: "The evolutionary panorama which his work unfolded, revolutionised knowledge of early man, his contemporaries and his forerunners" (Cole 1975, p17) is his biographer's view. The picture given by Melvin Payne, a close friend,

is of “a brilliant, hulking man who dedicated his life to pushing back the horizons of the past” (Cole 1975, p408). But it is not just Louis Leakey who is renowned; his second wife and co-worker, Mary Leakey, is linked with all his work from the mid-1930s, with equal acclaim. Allotting him credit for “the most determined pursuit … with a clear archaeological objective in the whole history of archaeology”, fellow archaeologists, Renfrew and Bahn, link with his name that of Mary, for “between them (they) pushed back the known dates for our immediate ancestors by several million years” (Renfrew and Bahn 2004, p40). Speaking for “lay people and anthropologists”, Klein and Edgar declare that the understanding of early human evolution in the context of eastern Africa “is due largely to the extraordinary dedication and talent of Louis and Mary Leakey” (Klein and Edgar 2002, p42). The role of others in the introduction to Leakey of prehistoric remains in South Africa is stressed by scientists Lewis and Towers: “several species (of man-ape) were discovered by Raymond Dart and Professor Broom in 1924 and 1947 … but it was not until Leakey found pebble tools associated with a skull … that any convincing evidence was forthcoming” (Lewis, J. and Towers, B. 1970, p31). It is this *convincing evidence* that, towards the end of the nineteenth century, Thomas Huxley and John Lubbock so earnestly longed for – and were sure would come. Their prediction was justified, in the early twentieth century, by the work of Louis and Mary Leakey.

Born in 1903 in Kenya, Louis Leakey was to spend his working life investigating the prehistory of mankind in East Africa. His parents were Anglican missionaries (Willis 1995, p105) with the evangelical Church Missionary Society involved in pastoral work and education amongst the Kikuyu (Cole 1975, pp24-25), both having a wide experience of the country and its people. His mother had gone out independently to nurse and teach children living at the coast (Cole 1975, p27), whilst his father, an ordained teacher, had a particular interest in the natural history of the country, which he pursued throughout his life (Cole 1975, p33). The background for the life of the family was thus one of disciplined Christian faith together with enterprise, toughness and dedication in all that was done, in the setting of the home (Cole 1975, p13). Educated privately at home in the early years, the Leakey children learned much from the Kikuyu neighbours with whom they associated freely (Leakey, L.S.B. 1974, p11 : Cole 1975, p34), Louis becoming an initiated member of the tribe through his keen interest in their way of life and beliefs (Leakey, L.S.B. 1974, p3 : Willis 1995, p105). It was in this early period that he developed two abiding interests; one was in wild life and the other in prehistory (Cole 1975, p37). It was the local museum

curator Arthur Loveridge (Cole 1975, p36) who encouraged him in his early interest in the Stone Age, identifying tools that he had collected: “from that moment, Louis became addicted to prehistory” (Cole 1975, p37). He had much to learn, in the years to come, about fossil hunting, but, in his own words, “my Kikuyu training taught me this: if you have reason to believe that something should be in a given spot but you don’t find it, you must not conclude that it isn’t there. Rather you must conclude that some powers of observation are faulty” (Cole 1975, p35). Having gained a place at Cambridge – graduating in anthropology (Leakey, L.S.B. 1974, p12), he decided against a missionary career, and that his real desire was “to study man’s origins” and to do it “in the continent of his birth” (Leakey, L.S.B. 1974, p12). By combining further studies in archaeology, he entered into academic research involving him in a series of expeditions in East Africa, so starting out on a career that, in making him famous, did much to establish prehistoric archaeology as an academic discipline through which knowledge of the world’s human origins would expand and extend into the second half of the twentieth century.

Tracing the origins of human life to Africa would involve Leakey in three strands of investigation: (i) finding fossilised Hominid remains – skulls, joints and limb bones – together with artefacts associated with them; (ii) finding them in geologically ancient areas, beyond the two million years of the Pleistocene era, even to the Miocene of twenty or more million years ago; (iii) finding them in Africa in strata earlier than any similar remains had been found in Asia or Europe (Willis 1995, p106). Wildly ambitious though his purpose was, it followed the hopes and predictions of nineteenth century science – Lubbock’s anticipation of anthropoid apes in the Miocene (Lubbock 1913, pp424-425) and Darwin’s prophecy that Africa would be mankind’s birthplace (Leakey, L.S.B. 1974, p210). He went further, being also convinced that types such as “Neanderthals in Europe and Java and Peking man in Asia were … aberrant offshoots of the main human line” (Willis 1995, p106). Nevertheless, in the context of what was known when he launched his first expedition in 1926, the vision was vastly optimistic and the task immense. At that time, whilst Europe had provided remains of early *Homo* sapiens, Asia early hominids, South Africa chimpanzee-like skulls with human attributes (Klein and Edgar 2002, p32) and England with Piltdown human-sized cranium and ape-like jaw [to be shown, in 1953, to be the work of forgers] (Stringer 2011, pp14,16), the interior of Africa seemed to show little more than 3000 years of human activity (Willis 1995, p101). When Leakey began his research, therefore, “the prehistoric map of East Africa was practically a blank” (Cole 1975, p14).

To see how some of the 'blank' parts in the East African map, most notably the Great Rift Valley, were filled through Leakey's work, what was achieved during the main phases of his life need to be identified. In the late 1920s and early 1930s he was to follow up work done by a German geologist in the Olduvai Gorge in Tanganyika [now Tanzania] where, up to that time, prehistoric stone tools had not been found (Leakey, L.S.B. 1974, p13). This was now to become "a unique showcase not only of animal fossils, but also of tool forms and associated human occupation sites over a period of a million and a half years or more" (Leakey, L.S.B. 1974, p13). By 1932 not only had human remains been found and named 'Olduvai Man', reckoned to be half a million years old (Willis 1995, p107), but with it were stone tools of a type already known in Europe (Leakey, L.S.B. 1974, p13). There followed the finding of parts of human skulls and jaw bones, together with hand axes, at a site on the Kavirondo Gulf area of Lake Victoria (Leakey, L.S.B. 1974, p13). The antiquity here was supported by the association also with remains of an extinct type of elephant. "The jaw bone was … dug out of a small cliff … by a member of my African staff", wrote Leakey in his memoirs, the discovery being "accidental, since he was engaged at the time in digging out a molar tooth of an extinct type of elephant known as Deinotherium" (Leakey, L.S.B. 1974, p20). Having established that the jaw found was that of a human origin (through its not possessing a 'simian shelf') (Leakey, L.S.B. 1974, p21), and putting all his items of evidence together, Leakey determined that, in East Africa, modern humans had existed in Middle or even Lower Pleistocene times (over half a million years ago) (Leakey, L.S.B. 1974, p21). For a variety of reasons his colleagues in England did not agree with him (Leakey, L.S.B. 1974, p14). The most valid ground for the dispute was the unreliable nature of the evidence he produced. Whilst both the Royal Anthopological Institute and the Royal Society, to whom he had presented his findings, agreed that the remains were of a "primitive *Homo* sapiens" (Cole 1975, p96), they were not satisfied with his estimate of geological age, their doubts being substantiated when the sites were found to have been inadequately recorded and photographed (Cole 1975, p99). Having received criticism not only for his lax methods but also questioning his integrity, Leakey was obliged not for the only time to "eat his words" (Willis 1995, p107). His impulsive nature, coloured by a determination, with regard to established views, "to prove them wrong" (Cole 1975, p14), would lead him many times to make rash judgements, but he learnt through experience, it seems, to restrain his enthusiasm for publicity and from the time of his being accompanied by Mary Leakey, the work done together was of a different calibre, being well documented, preserved and thoroughly checked (Willis 1995, p109).

During the 1940s when working in the same Kavirondo area, but on an island in Lake Victoria – Rusinga Island – Louis and Mary Leakey "stumbled on a rich treasure of Miocene fossils" (Willis 1995, p109). Arthur Hopwood, of the British Museum, had earlier found "an ape-jaw fragment" in the area, that he had named '*Proconsul africanus*', "a name that suggested it was the ancestor of the trained chimp Consul" (Willis 1995, p109). Amongst the hundreds of hominid fossils which the Leakeys collected was one almost complete skull which appeared to be that of a *Proconsul* (Willis 1995, p109). It was crushed and fragmented but Mary Leakey was able to reconstruct it and it "stands as one of the outstanding achievements of palaeontology" (Willis 1995, p110), since it cast light on human evolution in the Miocene period, previously unknown. In his memoirs Louis Leakey expressed his hopes for its recognition as of supreme importance: "I, on my part, was determined that our *Proconsul* material from the Miocene deposits on Rusinga should be considered as a possible link in the evolutionary story of man in Africa" (Leakey, L.S.B. 1974, p196). It was decided that the "leading physical anthropologist of the day" (Leakey, L.S.B. 1974, p196), Sir Wilfred Le Gros Clark, should be consulted and the skull was duly taken to England for him to give his opinion (Cole 1975, p174). In his report he emphasised the hominid characters such as the smooth forehead contours, but also "several monkey-like features" (Cole 1975, p175) including nose and brain shapes. These were later added to by consideration of the shoulder joint shape, leading to a judgment of less ape-like and more monkey-like locomotion (Lewis and Towers 1970, p78). Nevertheless, the jaw construction and teeth suggested "a closer ancestral lineage of the apes and ourselves than it does of the Old World monkeys" (Willis 1995, p110). Considered to have lived in early Miocene times, *Proconsul* was seen as dating human origins back to 18-20 million years ago (Cole 1975, p77).

For some time Leakey had been planning what he considered to be essential for the progress of prehistory. In the early post-war years he spent much time "making preliminary plans for the Pan-African Congress of Prehistory, to be held in Nairobi sometime in 1947" (Leakey, L.S.B. 1974, p195). The aim was to give those engaged in African prehistory an opportunity to "meet one another and discuss their work, as well as to open the eyes of the rest of the world to what was being done by these pioneers" (Cole 1975, p151). Collaboration between workers in different disciplines was rare and it was Leakey's plan to mix archaeologists with geologists and human anatomists (Cole 1975, p151). There was often a time-lag of decades before an archaeological discovery in one

part of the world was compared with a similar one in another (Cole 1975, p152) and isolated pockets of work were often deemed unworthy of scrutiny or else of no significance (Cole 1975, p152). He was determined to bring together leaders in the various fields and from various nations, including Le Gros Clark and Abbe Breuil as well as Dart and Broom whose work in South Africa had been ignored for many years, and also representatives from countries in Europe and Asia (Cole 1975, p152-153). It was particularly important that the *Australopithecus* specimens should be discussed since, at the time, on account of their chimpanzee-like brain case, though with man-like teeth, they were distinctly different from the then accepted 'Piltdown' (Leakey, L.S.B. 1974, p196). This meant that they were considered to represent "a local variant of an ape-like creature … in no way directly related to the Hominidae" (Leakey, L.S.B. 1974, p196). By seeing the specimens himself, Le Gros Clark was able to draw his own conclusions (Leakey, L.S.B. 1974, p196) and it was made clear to the Congress that "these man-like fossils were hominid, not pongid" (Leakey, L.S.B. 1974, p211). At long last the Australopithecines were accepted as belonging to the Hominidae (Leakey, L.S.B. 1974, p211). Included in the itinerary were visits to the areas of exploration near at hand in the Nairobi district (Cole 1975, p155) and further afield to the Olduvai Gorge (Cole 1975, p156), the area that the Leakeys were to return to and make the discovery that they are best known for (Leakey, L.S.B. 1974, p260).

In the 1950s the Leakeys undertook the excavation of the two oldest beds of the Olduvai area (Willis 1995, pp106-107) and it was in Bed I that, in 1959, Mary exposed fragments of a skull and teeth that were "unquestionably hominid" (Cole 1975, p229). When painstakingly put together, the skull closely resembled one of the South African Australopithecines (*A. robustus*), and to it, Louis gave the name *Zinjanthropus boisei*, though, by virtue of its large molar teeth, it earned the nick-name 'Nutcracker Man' (Cole 1975, p231). At the site was also found a living floor containing broken bones and Oldowan tools (Cole 1975, p230) and it was assumed that the skull was that of the hominid that had made the tools, though this could not be confirmed at the time (Cole 1975, p238). Later on, further finds (Cole 1975, p238) led to the realisation that several kinds of hominid had lived at various times at the site and that *Zinjanthropus* was probably not the maker of the tools found there (Willis 1995, p112), a further skull similar to *Australopithecus africanus* and later named *Homo habilis* being the tool-maker (Willis 1995, p112).

The dating of the Olduvai beds had, up to this time, been vague, though certainly

Pleistocene, but potassium/argon dating was developing and a more precise estimate could be made (Cole 1975, p251); Bed I was thought to have been laid down about 1.75 million years ago. The younger Bed II was soon to reveal evidence of life associated with a more advanced handaxe culture (Willis 1995, p112). It was already established as a stratum containing early stages of technology but "no remains of the early handaxe-makers were yet known" (Cole 1975, p240). Louis himself discovered bones which seemed to him to fill this gap (Cole 1975, p240), his hope for them being "of *Homo sapiens* type, but primitive" (Cole 1975, p240). The skull's large dome and immense browridge (Willis 1995, p112) however, led to its being identified with Java and Peking man as a form of *Homo erectus* (Cole 1975, p241), the first solid indication of that species having lived in East Africa (Willis 1995, p112).

As work went on into the 1960s in the Olduvai beds, hominid teeth, skulls and limb bones were collected (Cole 1975, p253), the latter being scrutinised by specialists, at Leakey's request, with a spectacular outcome (Cole 1975, p253). After studying the hand and foot bones, human anatomists Davies and Day reported that "the fingers and thumb were surmounted by broad, flat, nail-bearing terminal phalanges … found only in man" and "the foot was completely human" (Cole 1975, p253). Here was evidence of a human species capable of making tools in the Lower Pleistocene of the East African Rift Valley (Cole 1975, p254). It was Dart who proposed the name *Homo habilis* (Cole 1975, p254) and, though arousing criticism for bringing in the genus *Homo* at such an early period, rather than *Australopithecus*, Leakey incorporated it into his own theory of how humans had evolved. Starting from Miocene Hominoidea in East Africa, he traced early hominids through to a stock giving rise, some 2 million years ago, to both the aberrant *Australopithecus boisei* and the progressive *Homo habilis*, the latter leading to the *Homo erectus* branch and, after a further million years, to *Homo sapiens* (Cole 1975, p255).

To achieve his purpose of making his findings as widely known as he could, Louis Leakey took time from the work in the field, not only to write, lecture and organise meetings but also to raise funds to keep the activities going (Cole 1975, pp18-19) and throughout the 1960s the work of Olduvai was left for Mary to continue, aided by their son Richard (Willis 1995, pp116-117). Striking out on a different area of the Rift Valley, on the shore of Lake Rudolf (Turkana) (Willis 1995, p117), Richard was to find there, signs of hominid activity "at least half a million years older than the oldest remains of Olduvai" (Willis 1995, p117). As a

consequence, by 1972, he was able to show his father a skull (the famous 1470) of modern *Homo* appearance, with as large a brain case as *Homo erectus*, yet without the prominent brow ridges – and more than half a million years older (Willis 1995, pp118-119 (Fig. 5.3). For Louis this find represented the direct ancestor of modern man, existing in early Pleistocene times, perhaps 2.6 million years ago (Cole 1975, p402). Coming at the culmination of his career and through his son's skilful carrying on of his own work, this was a worthy climax to his life-long efforts to promote prehistory; he died a few days later (Willis 1995, p119).

In discussing the work of the Leakeys and its value for posterity, Renfrew and Bahn stress both the importance to archaeology itself and also to the study of the phases of humankind in prehistoric times (Renfrew and Bahn 2004, p40), each of which has a relevance to twentieth century ideas about human uniqueness and conflicting views between science and theology.

As a discipline, archaeology with a scientific basis was new (Renfrew and Bahn 2004, p35) and for it to gain academic status "field projects with well defined research objectives" were essential (Renfrew and Bahn 2004, p39), as were the development of excavations, sampling and screening (Renfrew and Bahn 2004, p39). Their contribution towards this end is clear, preparing, as it did, the way for fossil evidence and artefacts relating to prehistoric humanity to be accepted and recognised as convincing by other disciplines and the general public (Cole 1975, p15). Being intensely interested in every aspect of evolutionary prehistory, Louis gained the support of renowned specialists in all branches of anatomy, palaeontology and geology such as Le Gros Clark and Abbe Breuil (Cole 1975, pp152-153) as well as Julian Huxley (Cole 1975, p73) and Teilhard de Chardin (Raven 1962, p127). The kudos which the many honours awarded him (Cole 1975, pp188,222,248,297) contributed as much as his personal fame to the obtaining of funds without which the projects would not have flourished and set a precedent for the future (Cole 1975, p15).

Though controversy was a frequent outcome of Louis Leakey's pronouncements, conflict arose largely around the science of his discoveries and his interpretation of its significance (Willis 1995, pp107,112) rather than with any theological implication. His own arguments with Christian doctrine were related to the social dogmas implied (Cole 1975, pp120-121) rather than their incompatibility with his discoveries and what they might signify for

Christian belief in Scriptural truth. Certainly, for him, Christian beliefs were no barrier to the development of ideas about the origin of the unique human species, through evolution (Leakey, L.S.B. 1974, p12).

Julian Huxley

Living at the same period of the twentieth century as Louis Leakey and sharing with him an interest in the evolution of the human species, was Julian Huxley – grandson of Thomas Huxley and, like him, a biologist, writer and public figure (Ruse 1999, p88). He too was a follower of Darwin, but, by virtue of his knowledge of the genetics and microbiology of his time a neo-Darwinian (Southgate et al. 1999, p144) and, like Darwin, interested not only in the science of evolution but also in its significance (Ruse 1999, p90). "All my life I have been interested in evolution and its manifestations", he explained later in his life, adding that his earliest endeavour was to "clarify the workings of evolution as a process, both in biology and its human phase" (Huxley J. 1964, p5). For him the evolutionary process was a progression with a biological climax, mirrored by an intellectual climax "marked by the appearance of *Homo sapiens.*" (Ruse 1999, p95). This took him well beyond the spheres of biology and palaeontology into the controversial realm of evolution's implications for religion. Considering God as an hypothesis, he held that the time had come for a new agency of religious thought: "the evolutionary vision of man's place and role on the universe which science … has given us, could be the revelation of the new dispensation" (Huxley J. 1964, p225). Supporting fully, therefore, the evolutionary theory of human origin held by scientific palaeontologists such as Leakey and, to a lesser extent, by theologians such as Teilhard de Chardin, he clearly stands out as one holding an extreme view, based firmly on the scientific uniqueness of human beings, through biology and intellect, at the expense of orthodox religion, Christianity in particular.

Julian Huxley was born in 1887, received a formal education at Eton and Oxford and, after a short period of lecturing in biological science, had a career outside of university life, writing extensively and addressing public meetings, in addition to being secretary of the London Zoo and also director-general of UNESCO (Ruse 1999, p88).

The work for which he is perhaps best known, his book *Evolution: A Modern Synthesis*, was the result of the interest aroused by the subject of an address he gave to the 1936 BAAS on Natural Selection and the Evolutionary Progress which reflected his keenness to relate the advancing understanding of heredity to Darwinism, since "the modern concept of natural selection … is quite different from that of Darwin's day[and] … the idea of evolutionary progress … has been undeservedly neglected" (Huxley, J. 1963, pxi). He felt strongly about the "curious phase of anti-Darwinian prejudice which beclouded the minds of many *avant-garde* biologists for the first three decades of the present century" (Huxley, J 1963, p5), followers of Mendelian genetic research having rejected Darwin's ideas on the grounds of their mutual contradiction (Southgate et al 1999, p144). The 1940s, however, saw a combining of the two in what was to become known as neo-Darwinism, to which Huxley contributed, enhancing it with his idea of a 'modern synthesis' – the synthesis of Mendel and Darwin (Dennett 1995, p20).

An important outcome of this new concept was the evidence science was providing for the nature of evolution as progressive, progress being not only forwards but upwards – that is to say exhibiting a force leading to a greater independence of species (Lewis and Towers 1970, p75). With the appearance of modern man, the independence achieved was exhibited in the control which the development of human intellect could exercise regarding the environment and thus on the direction of evolution itself (Lewis and Towers 1970, p75 : Ruse, M. 1999, p95).

An able, but not distinguished, scientist (Ruse 1999, p98) and without specialist knowledge of palaeontology, Huxley followed his interest in human evolution along the cultural trends arising from the developing human intellect, stressing always the dependence of this on the biology of the brain (Lewis and Towers 1970, p86). In his view, evolution showed itself as having a direction towards a higher degree of organisation (Ramsey 1965 p119) and, in the case of human progress, no further advancement would occur without human choice, human effort and human purpose (Lewis and Towers 1970, p86). An immense responsibility thus lay in the hands of humanity – a humanity that was in the throes of a new stage of evolution, the psychosocial stage: "This new idea-system", he wrote, "I shall simply call *Humanism*" (Huxley, J. 1964, pp72-73). Formulating this idea in the 1940s, he qualified it as *Scientific Humanism* (Huxley, J. 1942, p260), but later on, in the Commemorative Address he gave at the Centennial celebrations of Darwin's *Origin*, he put

forward this new vision as “inevitably an evolutionary one” (Huxley, J. 1964, p74). Evolutionary Humanism was what he had come to put his trust in.

Huxley traced his vision in a progression of successful plant and animal groups advancing, by way of biological advantage, to become dominant over the unsuccessful, and thus declining, one. Following this theme through the Mammalia, he saw pre-human ancestors advancing in stages, from a hundred million years to less than a hundred thousands years when “man could begin to deserve the title of the dominant type” until, less than ten thousand years ago, “he became fully dominant” (Huxley, J. 1964, pp74-76). Up to this final stage the process had been biological, the breakthrough coming with Man’s psychosocial evolution. His view was that this progress, though embryonic, was clearly upward and ultimately, “man’s destiny is to be the sole agent for the evolution of this planet” (Huxley, J. 1964, p77). Such a task demanded the exercise by man of “the right use of the mind” and to achieve success he must do it “unaided by outside help” (Huxley, J. 1964, p78).

It is at this point that Huxley brings religion into his vision, his reasoning being that “In the evolutionary pattern of thought there is no longer either need or room for supernatural” (Huxley, J. 1964, p78). The Earth had evolved as had plants and animals including humans, the mind and soul as well as the brain and body. Religion too had evolved but “is destined to disappear in competition with truer … thought organisations: no longer can evolutionary man escape from the responsibility of making decisions by sheltering under the umbrella of Divine Authority” (Huxley, J. 1964, p79).

To defend himself from the criticism that his ideology implied inevitable loneliness for mankind, Huxley resorted to the notion that his theological friend, Teilhard de Chardin, proffered. This was that Man is not alone in his thinking, “He exists and has his being … in the noosphere”, floating in which are “the aspiring ideas of man long dead … the knowledge of science and the wisdom of the ancients … waiting to be called upon, an array of potential helpers” (Huxley, J. 1964, p80). His own belief was that the evolutionary vision would bring about the discernment of a new religion, arising to service the needs of the coming era since evolutionary truth “frees us from subservient fear of the unknown and supernatural” (Huxley, J. 1964, p88). Humanism would not do away with divinity, for “A humanist evolution-centred religion too needs divinity, but divinity without God, … we

must melt down the gods and refashion the material into new and effective organs of religion enabling man to exist freely and fully on the spiritual level as well as on the material" (Huxley, J. 1964, p223). Humanism was to have its own values, rituals and symbolism – remodelling ethics, salvation, worship and prayer, enlisting the help of psychiatry to explore the inner selves of its followers" (Huxley, J. 1964, p225). He was convinced that for the first time in history, "science can become the ally of religion instead of its rival or its enemy" (Huxley, J. 1964, p103).

Throughout his life Julian Huxley was assailed by critics of both his science and his views on religion. In the 1950s, his support for Teilhard de Chardin's 'noosphere', seen as preparing the way for the 'omega point' identified with Jesus Christ (Ruse 1999, p99), brought the accusation from science of being willing to be "deceived by nonsense" (Ruse 1999, p99). It has been said of his *Evolution: The Modern Synthesis* that "it was no more than it claimed: a synthesis and not something at the cutting edge" (Ruse 1999, p98). It predicted nothing special, bridged no gaps and pointed no way forward in scientific inquiry. Much the same is observed in relation to his evolutionary view of ethics, a topic creating much interest when discussed by Thomas Huxley yet, when re-opened by Julian, it "evoked little attention from moral philosophers" (Ramsey 1965, p107).

Searching throughout his youth for a substitute for Christianity, it seems that Huxley was to find it in the progress manifest in the process of evolution (Ruse 1999, p94). In formulating his scientific Humanism on this basis, novelty is clearly lacking: his principles are undoubted replicas of the Christian models and his declared aim for its followers was for them "to have life and have it more abundantly" (Huxley, J. 1942, p260).

Central to his ideas, however, was human uniqueness, as his book entitled *The Uniqueness of Man* confirms, and in which he proclaimed that "Man represents the culmination of that process of organic evolution which has been proceeding on this planet for over a thousand million years" and that "the human mind and personality are unique and constitute the highest product yet achieved by the cosmos" (Huxley, J. 1942, p32). His philosophy extended this uniqueness of humanity to a complete responsibility for itself and its future, taking on what had been on the shoulders of "mythical gods or philosophical absolutes" (Huxley, J. 1942, p33). Entering thus into fierce controversy with theology, he resolutely persisted with his dogma, showing no sympathy with the current feeling that it was

imperative to reconcile scientific outlook with religious belief – even when he was aware of it in his close friend Teilhard de Chardin (Raven 1962, p97).

Pierre Teilhard de Chardin

The Jesuit priest and scientist, Pierre Teilhard de Chardin, grew up in the French province of the Auvergne. Born in 1881, the fourth of a family of eleven, his background was of a secure family life in the rugged countryside around Sarcenet, regulated by devoutly religious parents and a classical education, in the tradition of the Jesuits (Teilhard de Chardin 1964, p17). Encouraged by his father, he developed a keen interest in natural history and geology (Raven 1962, p30), together with a mystical concept of Christianity, through the influence of his mother, to whom he owed "all that was best in his soul" (Teilhard de Chardin 1960, p17). At eighteen, as a Jesuit novitiate, he studied languages and philosophy, gaining experience of the natural sciences through extending his "imperfect knowledge" (Teilhard de Chardin 1960, p20) in spare-time collecting expeditions (Raven 1962, p32).

That a Roman Catholic Frenchman, academically unqualified in a branch of science, should be selected as a representative of early twentieth century views of the evolution of mankind, with a bias toward Protestant Christian doctrine, needs, first of all, to be justified. The views expressed by some Protestants with a particular interest in Teilhard de Chardin's work and writings have been selected.

In his preface to *Teilhard de Chardin : Scientist and Seer,* Charles Raven gives the setting for the philosophy behind the dialogue between science and theology of his time, describing "the naïve materialism of the beginning of the century and the anti-religious humanism which succeeded it" (Raven 1962, p14). This he contrasts with Teilhard's attitude of "testing the whole Christian claim by the standards of a science with which he is continually concerned" (Raven 1962, p14). In Ian Barbour's view, Teilhard presented a "unifying vision … indebted to both evolutionary biology and the Christian tradition" (Barbour 1998, p247), his concept of God "being modified by evolutionary ideas" (Barbour 1998, p101). Such ideas, whilst giving him acclaim and popularity, inevitably roused criticism from both theology and science (Lack 1957, p122), his vision, in Paul Tillich's estimation, demanding, on the one hand, "a special level of considering nature … independent of the progress of

natural sciences" (Lack 1957, p422), and on the other, "theologically precarious, even dangerous" (Lack 1957, p422). For some, such as John Polkinghorne, Teilhard's vision of evolutionary destiny (Polkinghorne 1994, p43) bore an 'unhelpful' optimism being unconvincing in regard to sin and evil (Polkinghorne 1994, pp162-163). The cause of his lack of credibility is suggested by Michael Ruse: "Teilhard presented his own thinking as pure science" (Ruse 2005, p218). Nevertheless, Teilhard de Chardin is considered as providing "an evolutionary theology of nature from which we can learn much" (Barbour 1998, p248), "a horizon for science and modern man" (Raven 1962, p14) and, for the second half of the twentieth century, an inspiration to try again to see if "evolutionary thinking could be incorporated into a Christian vision of the world" (Ruse 2005, p219). Though educated within the confines of local Jesuit institutions, his work took Teilhard de Chardin away from his native France and associated him internationally with workers both in his own field and outside it. Whilst in the early years of his career his work was designated by his Jesuit supervisors (Teilhard de Chardin 1960, pp20-21), later on he was permitted to hold positions with secular responsibilities, though with restrictions imposed by Roman Catholic authority (Raven 1962, p84).

His many years as a scholar included a period of study in Jersey when his community was expelled from France (Teilhard de Chardin 1960, p19), and it was there that he had time to develop his interest in geology which he was later to extend into palaeontology, whilst teaching at the Holy Family College in Cairo (Teilhard de Chardin 1960, p20). For the last year of his training for ordination he was sent to England where his thoughts were directed towards a philosophy of the person – a "universal being taking shape in nature", demanding for him, the need to be "looking for what is beyond the living" (Teilhard de Chardin 1964, p21). This seems to have been the beginning of his view of the universe as a "continually progressing, irreversible spiritualisation" (Teilhard de Chardin 1960, p22).

His service as a stretcher-bearer throughout the war years (1914-1918), for which he was awarded two high honours (Teilhard de Chardin 1960, p22), took a slice out of Teilhard's academic progress, but was to reveal to him "the hidden mechanisms by which man's will has power to shape his development" (Teilhard de Chardin 1960, p23). This concept stayed with him throughout the coming years when he was engaged in scientific research in Paris, in China and in India and Burma. In China, he became involved in work, based on geology and palaeontology, into various aspects of prehistory, evidence having been found of

Palaeolithic humans west of Peking (Raven 1962, p64 : p124). From India, he was able to visit Java and become involved, during the 1930s, in explorations by American and British workers which were to reveal previously unknown periods of Palaeolithic industry (Raven 1962, p125). First-hand knowledge of this sort enabled Teilhard to consider the problem of human origins in relation to the whole palaeontology of Malaya, Burma and south-east China (Raven 1962, p126), his vision of the progression of mankind, up to the present and into the future, starting there.

Short visits to Britain gave Teilhard the chance to witness an approach to prehistory rather different from his own and to discuss and modify his ideas accordingly. He was no expert palaeontologist, nor a Darwinian and, up to his time in Asia, "the origin of Man was outside his concern" (Raven 1962, p54). Whilst in England, his growing interest was enhanced by becoming involved with Charles Dawson's excavations in Sussex and thus in the controversies around the validity of the Piltdown skull which was later to be exposed as a forgery (Raven 1962, p48: Stringer, C. 2012, pp177-179). The episode clearly made an impression on him even so because of his familiarity with evidence of human origins in Asia, "it became impossible to think of Britain or indeed Europe as the birth-place of mankind" (Raven 1962, p57). On later visits he joined a geological excursion covering a wide range of sites, from South Wales to the north of Scotland, taking in a great many worked situations across the country (Raven 1962, pp66-67). This gave him the opportunity of renewing friendships with former colleagues, including archaeologist Dorothy Garrod (Raven 1962, p63) and scientist Julian Huxley as well as making new acquaintances such as A. Tindall Hopwood, whose work was closely associated with that of Louis Leakey (Raven 1962, p68). He was familiar with English, both spoken and written and contributed from time to time to the geological journals read by English specialists (Raven 1962, p69).

His friendship with anthropologist Henri Breuil, (Raven 1962, p51) his keenness to test the validity of Louis Leakey's claims for Olduvai (Raven 1962, pp131-133) and the interest shown in his ideas by the then Prime Minister of South Africa, Field-Marshal Smuts (Raven 1962, p66), drew Teilhard to Africa, later in his life; "In 1951 he was able to embark on his last adventure – the African studies which gave him his final clue to the story of our inheritance" (Raven 1962, p127) . Up to that time he had done much to establish Asia as the "cradle of the first hominid" (Raven 1962, p127). With the evidence provided by the

Leakeys' discoveries in East Africa together with those of Dart and Broom in South Africa, he became willing to agree that the continent of Africa was "the main birth-place of the human group" (Raven 1962, p128) though qualifying this view by a belief that there may have been division into two lines, one in Africa and the other in Asia (Raven 1962, p129). Convinced that humanity had arisen from sub-human forms, he believed that what separated modern man from them was solely the attainment of self-consciousness: "Man is not only a being who knows, but a being who knows that he knows" (Raven 1962, p133). For him, the emergence of humanity was "the arrival of a new and unprecedented entity; and by it, the world had entered upon a new phase of its development" (Raven 1962, p133). As he saw it, this was a religious event, essential to his vision of unity and it is a pointer towards the philosophy which he had been developing throughout his life.

As a worker in the scientific field of anthropology, gaining knowledge through palaeontology of the prehistory of the human race, Teilhard learned more and more of the conflict arising between evolutionary science and Christian doctrine. The opposing views were apparent to him, not only within the disciplines but also within himself, the anguish he felt at their incompatibility being intense (Willis 1995, p74). His desire was to reconcile the two – to spend his life persuading the world of his unifying vision – as a purpose in life, his science seems to him to be increasingly less worthwhile: his chief interest was in some sort of effort towards a plainer disclosure of God in the world (Willis 1995, p75). His 'disclosure of God', by way of his vision, was through evolution – the evolution of the whole of creation, culminating in the Omega Point, in three highly significant phases. "He saw an upward evolution through the realm of life (the biosphere), to the realm of humans and consciousness (the noosphere) and then even further onward and upward to the Omega Point, which … he identified with the Godhead, Jesus Christ" (Ruse 2005, p217). In expressing his concept of the past, present and future, he insisted on its being essentially scientific. In the face of criticism, his response was that he simply asked those who called his interpretation of the facts imaginative and poetic, to show him a perspective which more completely and naturally integrated the phenomenon of Man in the framework of biology and energetics (Lewis and Towers 1970, p118).

His concept was judged unscientific firstly on account of the 'force' which he conceived as the controlling power operating throughout, and secondly because of the directionality of the sequences, as he visualised them. Taking up the Bergson view of life-forces (Ruse 2005,

p219 : Willis 1995, p79), Teilhard defined a “law of complexity/consciousness” which operated at different levels – a second form of gravity operating “from atom to vertebrate” (Lewis and Towers 1970, p119). Such a vitalisation of the inanimate world did not fit the scientists’ view of a ‘law’ any more than the upward and onward movement which it supposedly initiated. Darwinian evolution was purposeless and had no goal (Willis 1995, p75): the scientific culmination of the world was a decay - a steady process of entropy. Nevertheless, Teilhard thought of the evolution of human consciousness as different, in that through human evolution there had been an accumulation of 'reflective monads' that formed a new and distinctly different kind of consciousness [the noosphere] which would lead to the establishment of the 'ultimate state of consciousness' [the theosphere] – the final goal, the Omega point (Willis 1995, p76). “Is it not conceivable that Mankind ... may reach a critical level of maturity where it will detach itself from this planet and join the one true irreversible essence of things, the Omega point?” (Teilhard de Chardin 1959, p127).

To him, this gave meaning to the whole of nature and, through the relative development of the nervous system within the biosphere, to higher living beings, thence to the primates and finally to the hominids (Lewis and Towers 1970, pp120-121). Thus, “after some two billion years of oscillation … the principal axis of complexity/consciousness finally succeeding in fixing itself, before man’s appearance, on the finally discovered path leading towards maximum cerebration” (Lewis and Towers 1970, p121).

In a prehistoric setting, he considered that “at the beginning of the Quaternary, a major event occurred in the realm of life” (Lewis and Towers 1970, p122): “In him [man] for the first time on earth, consciousness has coiled back on itself to become thought.” (Teilhard de Chardin 1959, p307). Hominisation was, in scientific terms, an evolutionary event – one which depended upon the phenomenon of ‘reflection’, a psychic concept, “justly appreciated in its physical reverberations” (Lewis and Towers 1970, p122). This reflective power gave to man a consciousness capable of coinciding with itself, (Lewis and Towers 1970, p122): “Indeed, from now on all the hopes and future of the Universe are dependent on the propositions and stubborn working of the scarcely-born power of internal 'self-arrangement'.” (Teilhard de Chardin 1959, p209). The outcome was the noosphere, where, through mankind, “the whole of evolution rebounds on itself” (Lewis and Towers 1970, p124), bringing into being a *New Evolution*. It was still biological, but through a new form of heredity: in place of the combination of chromosomes through fertilisation, *educative*

transmission had taken over, resulting in “a complex continually modified and augmented by conduct and thought” (Lewis and Towers 1970, p124). Together with this, he viewed collective reflection within society as *co-reflection* which, in turn, in the future should give rise to *supra-reflection*, putting mankind at the “head of nature” with the power of forming “a single point of universalisation” (Lewis and Towers 1970, p125).

From here, Teilhard led from the biological to the spiritual climax of his vision. The psychological human need for more than biological well-being – in fact for ‘more-being’ – had a requirement of spiritual concentration, for, in that, not its material basis, “the equilibrium of mankind biologically depends” (Lewis and Towers 1970, p127). The biological was thus, via cerebration, merging psychologically with the spiritual.

Contrasting Teilhard’s *Le Milieu Divin (1960)*, where much of his vision is put forward, with a range of books of devotion, Charles Raven declares that “here is, unmistakably, a manual of religion”, but one “relevant to a normal human being all the time”: it is not only about God’s world, “it is the real world as God revealed it to be” (Raven 1962, p101). The essential concentration had to be on the revelation God provides, not only in the present – man’s embryonic stage – but beyond, to the Omega Point, the indestructible centre of the universe (Raven 1962, p116). Through the dilemma of his mystical faith contrasting with his love of nature, Teilhard came to feel the real oneness of the cosmic, the human and the Christic in terms of a convergent evolution – a synthesis “evolutionary, co-operative and Christ-centred” (Raven 1962, p121).

Theologically, the concept of Cosmogenesis and Christification, in Raven’s view, is “actually and avowedly restating for us the theology of St Paul, as this came to its fullest expression” (Raven 1962, p159), this interpretation running through Teilhard’s writings (Raven1962, p160). Even so, criticism arose on the issues of evil and sin, Teilhard appearing to ignore the existence of evil (Southgate et al. 1999, p277) and to have no sense of sin (Raven 1962, p179). In his interpretation of cosmic evolution in association with the universal Christ, concepts of ‘creation’ and ‘fall’, separating God from the world, have no place (Raven 1962, p177). In his opinion, it was not that the world had been created without evil and without sin, but that they had to be considered a part of Creation, Incarnation and Redemption – “three phases indissolubly joined in the manifestation of the divine” (Raven 1962, p184). Sin and evil are seen to be inescapable by-products of a slow creative process” (Barbour

1998, p248).

Such a break with orthodox Christianity was bound to result in criticism and it came, not only from the Jesuits and the Roman Catholic authorities, but also from the Protestant Church in areas where it was being discussed, particularly in Britain. His notion of 'inwardness' existing in all of creation offended both science and theology; not only was such a quality imperceptible but, if it implied the possession of a soul, it was meaningless (Lack 1957, p121) and contrary to Christian belief. The problem of sin and evil, death and the ultimate climax of creation cannot, for some, be seen in terms of 'evolutionary optimism', as Teilhard does. This is why for some his writings are unhelpful, the ultimate hope having to rest "in the eternal God himself, and not in his Creation" (Polkinghorne 1994, pp162-163).

Bearing in mind Teilhard's declared purpose of bringing about "a plainer disclosure of God in the world" (Willis 1995, p75) and to hope through his writings to "teach how to see God everywhere, to see him in all that is … most ultimate in the world" (Teilhard de Chardin 1960, p46), the reputation he gained as "the most ardent embracer of evolution as a working-out of God's purposes in the world" (Southgate et al. 1999, p276) is a vindication. Seeking, as he did, to show how the dynamism of evolution in nature might "reflect divine activity in creation" (Baker 2006, p171), the view that his rethinking of Christian theology in the light of evolution, has led to a new view of God as "continuously and intimately engaged in an on-going creation of the universe (Baker 2006, p171) justifies his endeavours also.

Leaving argument aside, as Teilhard himself chose to do when struggling to get the essence of an idea across (Teilhard de Chardin 1960, p46), it should be said that there undoubtedly exists a central core in both his scientific and his theological ideas which may be considered sound, plausible and worthy of pursuit. Whilst Teilhard's view was distinctly his own, being an elaborate idea which gave Christianity a part in the evolutionary process with its goal of the Omega Point, he was not alone in rejecting what he saw as "the grim purposelessness of Darwinian evolution" (Willis 1995, p75). In fact, Alfred Russell Wallace the explorer and naturalist, was known to have considered that the universe was "slowly but surely marching onwards to a predestined end" (Willis 1995, p77).

Summary

As far as Lewis Leakey was concerned, his aim was to explore the background to the origins and evolution of the human species and to make public his pronouncements unrestricted by reference to Christian doctrine. But for Julian Huxley and Pierre Teilhard de Chardin the impact of the developing sciences had to be considered in relation to Christian theology. Huxley, through his aim to synthesise the new genetics with the evolutionary progress of the human species, was determined to replace the theological view of the flawed nature of humanity with the concept of human perfectibility. Teilhard on the other hand, saw the new sciences as having the power to enhance and extend Christian theology beyond traditional doctrines. How far these contrasting views, where science and theology were so different regarding human uniqueness, were recognised as significant in the challenge of the one to the other, was difficult to assess but the Protestant Churches were aware of it and expressed a deep concern.

Theology's Defence

So far had the separation of science and Christian theology gone with the development of biological science and palaeontology that in 1957 the Bishop of Southwark, Mervyn Stockwood, arranged for a series of talks in the University Church, Cambridge, when scientists were invited to give their views on the relation of science to religion at the current time. The anticipated outcome would be a reflection of what was felt to be necessary, in the light of the speakers' experience, to bridge the gulf between religion and science (Stockwood 1959, pp7-9). The first and last of the contributors held opposing views on what changes the Church needed to consider, a physicist advocating “no substantial change in the historic creed and form of Service” (Stockwood 1959, p20), but an educational psychologist judging this unacceptable on the grounds of there being a need to adapt both doctrine and religious activity to the “modern mind” (Stockwood 1959, pp87-89). Two of the group were biologists [F.G. Young and C.F.A. Pantin] and their views were more on the direct influence of their discipline, the moral aspects of evolutionary science on Christian faith and practice in particular (Stockwood 1959, pp44-45,82). A review of the feeling expressed by these four suggests the range of mid-twentieth century scientific thought and gives perspective to the challenge of science to the Protestant Church and its

doctrines at that time.

That the Church should hold resolutely to its creed and its practices may be seen as a refutation of the current idea that science had impinged on Christian doctrine, purging it of its beliefs (Stockwood 1959, p9). The physicist's contention was that since scientific work had little or no religious value, the two should be kept separate: where belief was beyond understanding, it should be recognised as 'outside' science (Stockwood 1959, pp18-19). The historical foundation of religion had to be retained, Divine Service having the power to bind worshippers together, through the past to the present (Stockwood 1959, p21). For the psychologist, on the other hand, it was essential for certain things to be discarded if the scientific mind was to be able to accept the Church's doctrine. Both Biblical fallibilities and the certainty given to theologically held convictions would have to go, together with the archaic language of the Prayer Book, in the interest of adaptability to the modern mind (Stockwood 1959, pp91-96). Such views, though those of professional scientists, show no indication of being influenced in any way by the controversial aspects of evolutionary science and human thoughts and beliefs.

One of the biologists however put the human mind into a setting of evolutionary biology. Natural Selection, giving rise to adaptations with the appearance of being purposive, could be seen to have a tendency of direction, through the development of the nervous system, towards an ability to relate the experience of the present to the past and to the future; the culmination of this was the quality of the human mind to both discern good and evil and to act accordingly (Stockwood 1959, pp73-79). Moral values thus arise as a contribution to action and from there to understanding and thence to wisdom, and “what we need wisdom for, is to make a choice”, a choice between “two enduring images of humanity” - the good and the bad (Stockwood 1959, p82). Though supported by the biblical *Proverbs,* such a hypothesis of knowledge through science was reckoned to give a purpose and plan of life as well as personal responsibility and human wisdom, which may well be seen to represent a challenge to traditional Christianity, and certainly to the doctrine of human nature.

The other biological view extended the evolutionary progress of the nervous system to its significance beyond its responsibility for conscious thought giving rise to moral and ethical values, to the concept of the 'soul'. Any idea of the introduction of “the soul into the animal body that was ultimately to become man” would seem to be unnecessary

(Stockwood 1959, p38), there being no reason why there should not exist “such complex patterns as could ultimately take in ... all the attributes of life as we know it” (Stockwood 1959, p40). Even though a person's free will allowed the making of non-provable religious assumptions (Stockwood 1959, p41), it could be said that all activities of mankind, including both religion and science, “jostle with each other in the mind” (Stockwood 1959, p45). They are not, therefore, incompatible but are “all able to find a place in the human mind, in its endeavours to solve the riddle of existence” (Stockwood 1959, p45). If this was what the Church was also aiming at, then Christian doctrine and practice would need to be adapted to the human needs exhibited through molecular biology as well as through evolutionary ethics and experimental psychology.

Since the talks aimed to indicate the ground on which scientists and theologians might meet, it was the Bishop's view that the Christian church would have to “make the attempt to understand the thought patterns of the contemporary world” (Stockwood 1959, p8).

Another bishop with a similar aim was, a few years later, echoing similar warnings with similar justification, in his book *Honest to God*: this was the Bishop of Woolwich, John Robinson. Coming from a representative of the Church itself and advocating “far more than a restating of traditional orthodoxy in modern terms” (Robinson 1963, p7), it was likely to, and did, cause infinitely more interest – and subsequent controversy – than the Bishop of Southwark's attempts aroused. John Robinson's reason for writing the book was that, in his own words, “I am convinced that there is a growing gulf between the traditional orthodox supernaturalism in which our faith has been framed and the categories which the 'lay' world ... finds meaningful today” (Robinson 1963, p8). Failure to bridge the gulf would bring increasing alienation within and outside the Church: in the words of Alec Vidler, quoted by Robinson, “we've got a very big leeway to make up, because there has been so much suppression of real, deep thought and intellectual alertness and integrity in the Church” (Vidler in Robinson 1963, p9). Acknowledging that his views labelled him a radical, his hope was for the Church to recognise as its task here and now, “a radical questioning of the established framework” (Robinson 1963, p9). He saw himself also as a humanist, but as an ‘open humanist’, as is explained in a later book, *In the End God*, where the relevance of evolutionary science to his proposals becomes apparent. Preferring, for himself, the label of Christian humanist, his suspicion of scientific humanism “in which science and evolution were capable of supplying our ethics and seeing us through”

(Robinson 1968, p20), was profound. As he saw it, “unless human individuals and human society are grounded in a reality that transcends the material life” (Robinson 1968, p21), the future for mankind is irretrievably bleak. On the other hand, though not associating the concept with scientific prehistory, he viewed Teilhard de Chardin’s ‘open’ humanism as a form accessible to those most predisposed by their studies to interpret everything within the process of change and decay” (Robinson 1968, p22). The huge number of letters written to the Bishop by readers of *Honest to God* (Robinson & Edwards 1963, Ch. III) gave an indication of the varied nature of the response to its publication. There was much resentment at the radical nature of his hopes for the transformation of established traditions but also considerable sympathy. For the Church of England, it was claimed that, in general, “the clergy have readily acknowledged the effect of the book and the controversy as a challenge” (Robinson and Edwards 1963, p47). Amongst the Free Churches, the Congregational and Presbyterians seem to have welcomed the publication of the book, “even though they may not have agreed with its conclusions”, such as the emphasis on freedom from the need to defend “beloved religious phrases” (Robinson and Edwards 1963, p32).

Seen thus in the wider context of the cry for radical change in the traditions of the Protestant Church from all sides of the Christian community, the demands from evolutionary science were but a part of a general dissatisfaction. This need for change has also to be seen in the even broader setting of the war and post-war years of the middle of the twentieth century. It seemed clear that “after the war, for the Church of England, life became a battle … as the country became one of the most secular in the world” (Chadwick and Ward 2000, p263). Facing up to this, a report, *Towards the Conversion of England*, in 1945, put forward modernising changes, recommending reconstruction rather than radical renewal. Even so, by the 1960s, the chief task for the Church “was its own survival” (Chadwick and Ward 2000, p263). Accommodation for the modern mind, stimulated by the science of human evolution, had, it seemed, not been achieved, if even attempted.

Throughout the discussions both on the Stockwood report and the *Honest to God* publication, on the relevance of early twentieth century biological science in the context of the realities of post-war society, the emphasis has been on the need for change – not change in response to the post-war society but change in response to the 'modern mind', the mind of the modern human individual.

CHAPTER V: THE HUMAN INDIVIDUAL

The influence of scientific endorsement and archaeological support for the theory of Evolution on the notion of human uniqueness, brought out by the three early-to-mid twentieth century 'figures', has been seen as disturbing for traditional Christianity. Mankind was being given not only a history through inheritance, but also a central place in the progress of the natural world and even a cosmic destiny. The accepted idea of humans as united by the sharing of a nature, deemed to be 'flawed', was being viewed by an advancing secular society in a different light. The 'modern mind' was requiring that human uniqueness should refer to the human individual person: a clearer picture was needed for what defines a human being.

A shift from, human beings as a species to the human being as an individual

Introduction

In his book *A Secular Age,* Charles Taylor sees the period of post war general dissatisfaction, *"*1960s or thereabouts", as a "watershed moment" in the western world, where nineteenth century movements to prevent the decline in religious adherence collapsed with the rise of modern secularity (Taylor, C. 2007, pp23-5). The changes that are identified, as underlying causes, include social factors related to industrialisation, urbanisation and migration, but also to a form of cultural revolution following the Second World War (Taylor, C. 2007, p436), coupled with "a widespread expressive individualism" where in a consumer culture, the pursuit of happiness took on a new meaning (Taylor, C. 2007, pp473-4).

There were other 'watersheds' where the individual figures as an emerging concept both in science and theology in the latter years of the twentieth century. In the forward to *God, Humanity and the Cosmos* published in 1999, van Huyssteen, giving the context of its interdisciplinary contributions, wrote "those of us who have been part of the developing conversation about theology and science during the past fifteen years now find ourselves in the middle of shifts in paradigm and intellectual changes so profound that suddenly the whole world looks different" (van Huyssteen in Southgate et al 1999, pxix). The authors of this book draw attention to 'figures and developments' which can be seen to have been instrumental in bringing about these shifts and to the influence of a number of theologian-

scientists whose work has been sponsored by organisations such as The Templeton Foundation. One name amongst others as both Anglican priest and former research scientist is that of John Polkinghorne. In his book *Science and Theology*, Polkinghorne stresses the significance of one of the most important meeting points of scientific and theological insights – that of the nature of the human person. Whilst, in his view, theology will link this with human religious experience, biology linking it with humanity's evolutionary emergence through its hominid precursors with the distinctiveness of the human genome (Polkinghorne 1998, p49). In Christian theology, this distinctiveness is to be found in the concept of Christ as the perfect archetype of an individual who is truly human. For biology, the distinctiveness that emerges from genomics is that of human individuality.

In their book *Genomes* published after the completion of the Human Genome Project in 2003, the authors, [Barnes and Dupré] in tracing the unfolding of classical genetics in the first half of the twentieth century, declare how the development of molecular genetics and genomics in the second half of the century "made the sequencing of the human genome a symbolic event of world-historical importance" (Barnes and Dupré in Southgate et al 1999, p4). Of most particular relevance is the light that has been shone on the nature of human nature – a question, over the centuries and long before genomes were known of, answered for many by the two human characteristics of reason and descent (Southgate et al 1999, p248). Pointing out that scientific evidence supports the view that reason, or rationality, distinguishes human beings from other animal kinds, the authors include the differentiation by virtue of descent through scientific studies of populations (Southgate et al 1999, p249).

The impact of genetics and the beginnings of epigenetics, had been foreseen in the 1970s through the work of Jacques Monod – a Nobel Prize winner – through his work in this field, and outlined in his book *Chance and Necessity* where, in the Introduction, John Maynard Smith (Monod 1971, pXI) expressed the firm view that Monod "had been able to show that the revolution taking place in molecular genetics, ... revealed the mechanisms that underlay evolution by natural selection". The text of the book challenged the ideas of the time and provided the foundation of a completely new look at the evolution of living creatures, including the human species, adopting a framework of chance (unpredictable accident) and necessity (implacable certainty). Natural Selection could no longer be seen

as the sole influence on genetic inheritance, since, as he went on to explain, the behaviour of organisms may, in part at any rate, determine "the nature and orientation of the selective pressure the organism sustains" and the greater the autonomy of the organism, the greater the orientation of selection (Monod 1971, p126).

For humans, the species exercising the greatest autonomy, this was throwing an entirely new light on the uniqueness over which there has been such a confusion of conflict and agreement over the centuries. In Monod's view, "it is in these terms that one must confront the problem of the selective pressures which have oriented human evolution" and in so doing it will seem that "symbolic language – a unique occurrence in the biosphere – opened the way for *another* evolution, creator of a new kingdom: that of culture, or ideas, of knowledge" (Monod 1971, p128). Whilst other animals appeared to have brains capable of retaining, recording and recalling information, none had the means of communication common to all human races, that is to say in a form which "permits the communication to another individual of an original, personal association" (Monod 1971, p129). The symbolic instrument of language and the feats it makes possible are connected with a considerable development of the central nervous system – a development which constitutes for *Homo sapiens*, his most distinctive anatomical feature – his brain and so his rationality.

But the notion of descent had, for Monod, the need for a much more positive approach: to learn more of what is distinctive about humans, it is not other animals but the hominid ancestors of modern man that had to be studied. Here Monod took up the most recent findings of the time, tracing symbolism from Dart's Australopithecines and Leakey's *Zinjanthropus* towards its modern expression in language, arguing that "once having made its appearance, language … could not help but greatly increase the survival value of intelligence … and thus create … a formidable and oriented selective pressure the likes of which no speechless species could ever experience" (Monod 1971, p133). He convincingly supported this with the newly emerging knowledge of epigenetics in relation to embryonic and post-natal development, extending its relevance to the symbolic nature of brain function observed in simulation – "the unique property of man's brain" – (Monod 1971, p154), on which language rests. This again he traced back to the ancestral hominids in whom memory, foresight and experience, lodged in the central nervous system, were propelled through inheritance to the "*Homo sapiens* of Cro-Magnon times" (Monod 1971,

p157) and so to the humans of the present day.

Thus it can be seen that as a biological concept, Monod's new look at evolution heralded the advance of the study of genetics into the broader field of epigenetics, of which there had been glimpses in the 1940s, but no significant development until the latter decades of the century (Chadwick and Cardew 1998, pp1-4). The work has meant the exposing of previously unknown relationships of genes with each other and with their environment, internal and external. In so doing, it has questioned earlier fixed ideas on how human beings could have acquired a unique status. Furthermore, his ideas brought to light, though tentatively on account of the sparcity of evidence, the importance of the knowledge of early mankind through prehistoric archaeology: by setting it alongside the developing science of biology, an understanding of human beings through the culture that arose as they evolved, a fresh outlook could be visualised, based not on extant primates but on extinct hominids.

This fresh outlook revealed a legacy from the past that had to be addressed – namely, the weakness of basing the foundation of human uniqueness on comparisons with other creatures, even closely related primates, without reference to the knowledge of closely related hominids that archaeology can provide. To advance an enquiry into a twenty-first century meaning of human uniqueness, this legacy needs, first of all, to be replaced by a more convincing presentation of the human species: that is to say, *Homo sapiens* has to be redefined.

Redefining *Homo sapiens*

"Human beings, in all their uniqueness, are the result of a long evolutionary process" (Tattersall 1998, p5): so wrote Ian Tattersall, at the end of the twentieth century, to introduce his book *Becoming Human: Evolution and Human Uniqueness*. Looking back on this process from that time, his vision of the nearest ancestors of human beings was through the 'astonishing record' they left in Europe in the latter part of the last Ice Age. Known as Cro-Magnons, these people were physically "indistinguishable from living *Homo sapiens*: and … the surviving material evidence of their lives indicates unequivocally that they were our intellectual equals" (Tattersall 1998, p6). They were, though, not the sole inhabitants of the areas where they left their evidence of occupation. There were also the Neanderthals – "a distinctive and now extinct group of humans belonging to the species

Homo neanderthalensis … complex beings and talented users of the landscape they live in" (Tattersall 1998, p5). Though having much in common with the Cro-Magnons, the material evidence they left indicates a different way of life, culture and intellect. "However you look at it, humanity's biological history goes back a long way … but when we search for the origin of those features that make *Homo sapiens* the unique species it is we don't have to look too far back into the past" (Tattersall 1998, p109). For Tattersall, this search, in which *Homo neanderthalensis* was included, meant going back several million years, to the appearing of the first hominids in Africa. After all "Darwin himself believed that we should look to Africa to find the cradle of humanity", as Stringer and Gamble observe in their S*earch for Neanderthals* (Stringer and Gamble 1993, p12) and research undertaken since the 1950s "has proved Darwin right". However, even by the 1970s, though fossils had established that Africa was the place where the genus *Homo* originated, the place of origin of the species *Homo sapiens* remained uncertain (Stringer 2011, p6).

However, human lineage is traceable by way of the first hominins to the earliest of the *Homo* species, *Homo habilis*, known to be living in Africa nearly two million years ago, and Cro-Magnons and Neanderthals shared a common ancestry from this epoch until somewhere between three hundred thousand and four hundred thousand years ago (Stringer 2011, p26), when there is evidence of a divergence. This means that sufficient changes had taken place by that time to establish permanent differences significant enough to determine two defined species. Representatives of each line of descent, existing in the same area of Western Europe and living under similar conditions some 40 thousand years ago left, in the parts they occupied, archaeological evidence of immense value.

The particular value regarding human uniqueness, is that the Cro-Magnons and Neanderthals here located were contemporaries and provide a means of testing out the uniqueness of *Homo sapiens* by comparison with a close, though extinct, relative. The outcome of a comparison of species with species, derived from knowledge of past times, will form the basis for humanness in the enquiry into human uniqueness in the light of the knowledge of the present time.

Much that is written on the research of the past twenty years into the pre-history of mankind, is illustrated in tree or bush diagrams, species being represented by skeletal evidence – skull features of cranium and jaw in particular. Otherwise linear charts are

employed, based on 'stones' – artefacts associated with fossil remains over a period of time (Klein and Edgar 2002, pp78&236). Each of these gives a clear indication of the fields of development in which archaeology has advanced and has achieved, thereby, a wealth of evidence. The meticulous care with which the findings are allotted a position in geological time is an indication of the advance that has been made in the methods of dating – a crucial element in archaeological interpretation. A further depiction of mankind in the past is through the location of human habitation on maps, particularly maps of the world where arrows indicate the theories held about the populating of areas beyond Africa, believed to have been brought about by migration during different eras of time (Lewin 1993, p11). These indicate not only skilful deduction from evidence, but also the use of twentieth-century knowledge of DNA in tracing lineages between continents and across oceans (Stringer and Mckie 1996, p132). The outline of the evolution and status of the two compared species, aimed at redefining humanity, will thus be derived from the wealth of archaeological evidence through research in the last decades of the twentieth century and in the first decade of the twenty-first, confirmed and enhanced by scientific advances in methods of dating and genetic interpretation.

Homo habilis, the 'tool-maker', epitomised, for those who first suggested the identification, the unique nature of humanity: the feature which, through evolution, marked the separation from all earlier hominids. Tool-making represented the ability to go beyond surviving by being adapted to the environment, to thriving by utilizing it. The physical features on which this transition depended included both an enlargement of cranial capacity allowing for cerebral development and structural forelimb and hand changes associated with the potential for manipulation and construction. The archaeological evidence for an accompanying change in way of life lay in the artefacts associated with the fossils, stones flaked purposefully as tools, in particular. The ancestors of modern humans had "begun the cultural event known as the Lower Palaeolithic, … an intellectual plateau that was to stretch out over the next two million years" (Stringer and McKie 1996, p23).

Appearing in East Africa about 2.3 million years ago (Stringer and McKie 1996, p23), *Homo habilis* differed from the earlier *Australopithecus* not only in skull shape but in jaw size and type of teeth. Rather than being adapted through robust mandibles and large grinding teeth to a diet of rough plant food, *Homo habilis*' jaws were slender and teeth small, indicating a diet of meat. Though clearly existing in parts of Africa at the same era of time

as their ancestral hominin, *Homo habilis* seems to have coexisted with other types of Hominin, perhaps large variants, or of a new species (Klein and Edgar 2002, pp82-85). By 1.7 million years ago, a distinctly different *Homo* species had emerged (Boaz and Ciochon 2004, p34). For some, this was the first *Homo erectus* (Stringer and McKie 1996, p24) whilst others identify a forerunner of *Homo erectus*, *Homo ergaster* ["workingman"] which "in form and geological age ... is well positioned to be the ancestor ... of *erectus*", but significantly for modern lineage, "also for *sapiens*" (Klein and Edgar 2002, p97). *Homo ergaster*, identified from a nearly complete skull in Kenya, is, by its overlapping with *Homo habilis*, by some recognised as early *H. erectus*, there being increasing evidence for considerable variation in size in *H. erectus* in different habitats in Asia and Africa (Gibbons 2007, p733 and p1664). However that may be, *Homo erectus*, recognised by workers in Asia as Java man and Peking man, has been reckoned, "the first hominid species that we know was not confined to Africa" (Stringer and McKie 1996, p30), leaving the continent between one and two million years ago and spreading into Asia and later into Europe.

Whether from *H. ergaster* stock or from early *H. erectus*, the next evolutionary step in the human lineage is identified by some as *Homo heidelbergensis*. Showing many of *H. ergaster* and *H. erectus* features, this hominin had a much larger brain encased in a broader cranium bearing clearly arched brow ridges (Klein and Edgar 2002, p135). Believed to have descended from African *H. erectus* it was known in Europe from 500 thousand years ago, having arisen perhaps 200 thousand years earlier (Bradshaw 1997, p184), it is believed that the stock of this species gave rise to the first *Homo sapiens* as well as the first *Homo neanderthalensis*. The common ancestor for the two species in Africa is thought to be *Homo helmei* and it seems clear that this shared origin was established between 300 thousand and 500 thousand years ago. *H. neanderthalensis* then moved through the Middle East to other parts of the Old World and latterly, by 250 thousand years ago to Western Europe (Mithen 2005, p222), *Homo sapiens* migrating into Asia about a 100 thousand years ago, reaching Western Europe about 35 thousand years ago (Stringer 2011, p26).

Though much debate surrounds the archaeology of these two *Homo* species it is generally agreed that descendants of each came independently to inhabit areas of Southern France, Northern Spain and Gibraltar by about 35 thousand years ago, being identified by the names Neanderthal and Cro-Magnon. The sequence of events, being based on the growing

amount of fossil evidence associated with an even greater number of artefacts, is interpreted in conjunction with the careful location of finds both in time, through geology and methods of dating, and in place, by the mapping of determined migration routes.

In the same way as with the pattern of evolution, there is no linear progression of anatomy that fossils, from *H. habilis* to *H. sapiens*, can show, some features remaining unchanged for long periods and others seeming to indicate a rapid change. "Each group has a set of characters that it shares with other hominids and another set that is uniquely its own" (Wills 1995, p134): significant trends, however, can be followed. The skull's cranial capacity shows an increase from 500-800cc in *H. habilis*, 750-1250cc in *H. erectus* and 1100-1400cc in *H. heidelbergensis* to a range of 1200-1700cc in *H. sapiens* and *H. neanderthalensis* (Mithen 1996, pp24-25) – statistics which are of importance when interpreting artefacts in relation to behaviour. Jaw suspension and types of teeth show a general change from small jaws with larger teeth to larger jaws with smaller teeth, a difference clearly related to dietary changes and, thus, ways of procuring food. The build of the body changed as did its strength, a section of a thigh bone of *H. erectus* showing a density of cortex twice that observed in *H. sapiens* (Lewin 1993, p30). Limbs, the hand in particular, indicate a trend towards greater flexibility together with a developing sensitivity of finger tips (Wills 1995, pp135-136) each increasing the possibility of more skill in manipulation of materials and tools.

Associated directly with fossil variation is the nature of their related artefacts. Purposeful stone-tool making seems not to have shown even a gradual progression in technology through Paleolithic times - "stasis in the number and types of tools produced is a much more apt description" (Lewin 1993, p31). Charts relating tool types to recognised cultures within the Stone Age periods show perhaps an advancement in intricacy by H. *erectus* tool-makers (Acheulean culture) but only relatively few types of tool (Lewin 1993, pp32-33). Though varying in different parts of the world, where tools were increasing in type, they were still made from stone; other material such as bone and ivory coming into use only with the Châtelperronian Culture [late Neanderthal] (Klein 2002, pp132-134).

It is in relation to artefacts that the advancement in methods of dating is most significant. Whilst the association of fossils and artefacts with geology and faunal remains continued as a basis for determining chronology, confirmation and precision came with the development

of more accurate physico-chemical methods. By the mid-twentieth century use had been made of the radioactive decay of isotopes of carbon and potassium which, in suitable samples, can be measured, carbon dating being of value with organic materials and potassium, decaying to argon, with minerals (Lewin 1993, pp82-83). Each has been found, however, to have limited application – radiocarbon dating being valid as a test only for the past 40 thousand years and potassium-argon tests only for materials older than 50 thousand years and in volcanic areas (Stringer 1996, pp146-147). But in recent decades, thermoluminescence and electron spin resonance techniques based on the release by heat of stored electrons measurable as light or by microwave radiation, giving measurable signals, each indicating geological age up to between 500 thousand and over a million years (Stringer 2011, p42). When used expertly, these techniques have provided a way of more accurately dating artefact materials such as pottery (Lewin 1993, p83). Climatic factors which are thought to have influenced movements out of Africa, have been studied through the measurement of oxygen isotope variation in glaciers and associated environments, in some cases indicating large scale temperature fluctuations (Boaz, N.T. and Ciochon, R.L. 2004, p32).

In determining the relationship of populations of hominids inhabiting areas of the world at different periods and in proposing the migration routes that took them there, it is biological methods that have been used, though “it is not an easy business” (Stringer 1996, p115). The advancement of DNA studies since the 1950s has provided techniques which have revolutionised the archaeology of human evolutionary traits regarding populations as well as human migrations, by the exploitation of knowledge of nuclear and mitochondrial DNA, both modern and ancient (Woodward 2003, p16). Ancient DNA, though characterised by scarcity, degradation, damage and contamination, has, through processing and cloning in bacteria (Krude 2004, pp68-71), been of value in establishing sequences of Neanderthal DNA. Through processing a bone sample from the specimen found at Feldhofer Cave in 1856, it was found that Neanderthal DNA fell clearly outside of the variation of modern humans (Krude 2004, p78). The mitochondrial DNA of living humans has, through its properties of constancy of rate of mutation and its transmission solely through the female line, been used in particular to trace modern human lineages back to an African origin (Stringer 1996, pp133-135). Nuclear DNA, in spite of the problems arising from contamination, has been used in attempts to establish a date for the divergence of Neanderthals and modern humans and thus relevant to evidence concerning interbreeding

(Dalton 2007, p7) and the male-specific part of the Y chromosome has been related to the determining of human African origin and dispersal less than 100 thousand years ago (Harpending and Eswaran 2005, p199).

The genome studies developing since the turn of this century have provided a means of identifying evolutionary changes in social behaviour ranging from dietary practice to the gaining of wealth. By exploiting the genetics of the human genome, the correlation between genes and particular traits can be traced through evolutionary time (Stringer 2011, p267). For archaeology, the importance of genetic evidence, as with dating, is the inference that can be drawn in association with fossil and artefact data. Where DNA results support archaeological findings, the establishment of criteria may well be justified, as with "the assignment to separate species of *Homo neanderthalensis* and *Homo sapiens* respectively" (Klein and Edgar 2002, pp185-186). Furthermore, the possibilities of this technique has gained credence in a more recent context; in determining the significance of the small stature of *Homo floresiensis* – the 18 thousand year old member of a new hominid species discovered in 2004 in Indonesia and described by P Brown and colleagues (Brown, P., Sutikna, T., et al 2004). Palaeontologists, differing in their views regarding the identification and origin of this dwarf species, with very limited fossil and artefact evidence to go on, have felt that additional evidence might come as suggested by some Oxford University analyses, from DNA where hominid teeth and bones seem to contain viable DNA (Highfield, R In Daily Telegraph 28.10.2004, p4).

It is interesting to observe, in this context, the contribution which the recently acquired knowledge of *Homo floresiensis* makes to the place the Neanderthal and Cro-Magnon humans hold in the Hominin evolutionary sequence. By some, it seems possible that through extreme climatic shifts in the past million years, small population size and local isolation may have resulted in a considerable sub-division of the genus *Homo* (Lahr and Foley 2004, pp1043-44). Palaeontologists may indeed find more 'unexpected' representatives with wider morphological variations than previously anticipated (Brown, P., Sutikna, T., et al 2004, pp1055-61). It would seem, therefore, that there may have been species, other than *H. neanderthalensis*, contemporary with *H. sapiens*, where comparisons would be valuable in discussions about uniqueness.

Thus, archaeology's discoveries and interpretations, supported, and in some cases verified,

by scientific techniques, provide ground for an examination for purposes of comparison of the Neanderthal and Cro-Magnon humans of the Middle to Upper Palaeolithic period of prehistory in Western Europe.

Whilst the earliest findings of fossil remains were recorded in the 1850s – Cro-Magnons in the Dordogne region of Southern France, in a rock shelter at Cro-Magnon in 1852 (Palmer, 2000, p22) and Neanderthals in a small cave in the Neander valley in Germany in 1856 (Palmer 2000, p13), a much repeated tale of discoveries made half a century later – in the early 1900s – brings the two 'human types' together in archaeological history. A complete Neanderthal skeleton was found in a rock shelter in the village of Le Moustier, in the Dordogne, followed by a buried Cro-Magnon skeleton in a cave site known as Combe Capelle, also in the Dordogne (Trinkaus and Shipman, P. 1994, p178). Beside the first was "a beautiful hand-axe" whilst the second appeared to have been buried with tools and shell-ornaments (Trinkaus and Shipman, P. 1994, p178). Since those days, a number of fairly complete skeletons of each have been found and preserved, the collections being added to by a number of complete skulls found together with limb bones, so that by the last decade of the twentieth century, archaeologists could say, "Putting the Neanderthal finds together, we can build up a picture of what these people looked like" (Stringer 1993, p73) : "we can create a reasonable general portrait of the average Neanderthal man, woman and child, … we cannot reconstruct the colour of their skin or eyes, … or how hairy they might have been" but "What we do know is that they were large headed, with big noses, strong brows, low foreheads and little chin development.": they would, however, "have looked recognizably human" (Stringer 1993, p95). Nevertheless the evidence suggests that the differences from the Cro-Magnons were "real enough, particularly in the high forehead, small brows, low square orbits, wide, short and flat face, small nose and prominent but hollowed cheek bones". (Stringer 1993, p180), giving them the altogether finer features of modern humans (Palmer 2000, p153). Furthermore, the Cro-Magnon physique was different; in contrast to the stockily built Neanderthals, whose forearms and lower legs were relatively short, "Cro-Magnons were taller and more slender, with long lower parts to the arms and legs" (Stringer 1993, p181).

Whilst a very great deal of detailed information has become available about the physical structure of these two prehistoric human types living not only in Western Europe but also in widely separated regions of Eurasia, the importance to the comparison, here, is in what

can be inferred about how certain physical features determined the way each "carried on their daily activities" (Stringer 1993, p95). Features to be considered in this way are, firstly the limbs and pelvis, secondly the face and throat together with jaws and teeth and thirdly the cranium itself.

The stockiness of the Neanderthal build is deduced from the thick bone structure of both limbs and chest and the associated areas of muscle attachment (Wills 1995, p156) and also from the articulation surfaces and the relative shortness of the distal parts of the limbs (Klein and Edgar 2002, pp175-176). This square heavy build, associated with cold-adapted people of modern times, contrasts strongly with the slender body and longer arm and leg Cro-Magnon features associated with warmer climates, together with the ability to move faster than the Neanderthals and travel longer distances (Palmer 2000, p153). The difference in structure of the pelvic girdle is thought to be important in this regard: the Neanderthal pelvis is distinctly wider and flatter than Cro-Magnon's, the hip joint facing laterally rather than forwards, suggesting less efficiency in walking and running (Palmer 2000, p153). The fossil remains of the hands and wrists of each suggest a similar dexterity and ability to hold and manipulate tools and weapons (Stringer 1993, p93), but it may be that the manner of so doing in confrontation, such as in hunting and killing, was different, Neanderthals using their strength at close quarters, Cro-Magnons exploiting their skills at a distance.

The somewhat pointed forward-extending central features of the skull would have given the Neanderthal face its distinctiveness, the external difference of cheek, jaw and teeth being of particular significance. The cheek bones sweeping backwards emphasise the extention of the jaws forward, this being related to the retro-molar space at the back of the jaw, unique to Neanderthals (Klein and Edgar 2002, p173) and to the strong and often worn-down incisors (Wills 1995, p156). Together with areas for muscle insertion of the lower skull, the dentition suggests the use of the front teeth for gripping or clamping objects – acting perhaps as a 'third hand' (Wills 1995, p156). The other facial features differing in the two species are the nose – broader with wider openings in Neanderthals – and the brow-ridges, absent in Cro-Magnons. Whilst made much of in facial reconstructions, archaeologists find no convincing evidence of these being of any particular relevance to activity or behaviour (Stringer 1993, p76).

Of considerable interest, however, for the relevance to the property of speech, are the structures of the throat, the larynx associated with the tongue and palate in particular, but unfortunately "all these important structures are made of flesh and cartilage and have left no trace in the fossil record" and so "have to be guessed at" (Wills 1995, p157). The bone structures giving a basis for this guesswork are the lower skull from which the organs were suspended and the hyoid – a tiny loosely attached bone and one rarely found [and never in Europe] in fossil form (Palmer 2000, p98). It is the position of the larynx in relation to the back of the tongue, the soft palate and the trachea that gives the potential for sound production: there has to be a freedom of movement for vocal cord vibration to take place and this, as observed in living humans, is achieved only when the larynx descends into the throat area in association with the wide U-shaped hyoid (Wills 1995, p157). In very young human children no speech-like sounds are possible whilst the floor of the skull is flat and the larynx in a high position. In Neanderthals the skull base resembles the modern-child form (Stringer 1993, p90), which suggests a difference in the vocal tract that would be expected from the more arched skull base of the Cro-Magnon. Before the fossil hyoid bone of a Neanderthal was discovered at Kebara (Israel), archaelogists thought that proper language which requires the vibration of the vocal cords in association with the hyoid, was not possible. But if Neanderthals did possess a hyoid which also provides support for the back of the tongue, this would give reason to suppose that they had a power of speech, not the same as Cro-Magnons' but, it would seem, uniquely different. But the ability to speak does not of itself provide the means to employ language. It may well be that whilst the ancestors of *Homo sapiens* communicated through an early type of modern human language, given what is known about the Neanderthal brain and child development, together with their likely vocal apparatus and way of life *Homo neanderthalensis* used a rudimentary form, "probably simpler in construction and restricted in its range of expression" (Stringer 1993, p90). As with every activity from locomotion and killing to butchering the prey and eating it, speech, in whatever form, requires more than the obvious physical means: it requires also the agency of voluntary nerve control, centred in the brain (Wills 1995, p297). There is another factor that is relevant to the question of the facility of speech and that is of a gene found in modern humans associated with the control of muscles associated with speech, called FOXP2. Lately this has been identified in the DNA of some Neanderthals (Stringer 2011, p190). This however can only be interpreted as giving the potential for speech; the use of speech in language still depends upon brain activity, for which there is no way of making an assessment.

Of supreme importance to a comparison of the activity deduced from fossil remains of the two species is, then, the knowledge that can be gained of the brain structure and potential through cranial studies of each (Lewin 1993, pp166-167). Although much can be calculated about brain size and overall shape from measurements of fossil crania, any estimate of the proportions of brain areas can only be conjectured from the limited information that casts can provide. Whilst variations have to be taken into account, examples, such as the Neanderthal 'Old Man' of La Chapelle-aux-Saints and the 'Old Man' of Cro-Magnon, have shown a remarkably similar brain volume of some 1600cc (Stringer 1993, p82). The significance of brain size is in its relationship to body size: conversion of size to weight for comparison with estimated body weight provides a recognised quotient – the encephalisation quotient, or EQ. The EQ for *Homo sapiens*, both living and extinct, is around 5.3 - 5.4, whilst for *Homo neanderthalensis* is reckoned to be between 4.3 and 4.8 (Stringer 2011, pp203-204), the difference being thought to be accounted for by the greater weight of skeleton and muscle associated with Neanderthals (Palmer 2000, p70). Even though a cast can indicate lobe shapes and proportions, the significance, without knowledge of interlinking areas, is unknown. One thing, however, is clear about the Neanderthal brain and this is the cerebral dominance it shows – the specialisation of right and left halves for particular functions (Stringer 1993, p83), showing again a similarity with *H.sapiens*. Suggestions that a lower degree of encephalisation indicates a lower level of intelligence in *H. neanderthalensis* are raised, principally in relation to artefacts and behaviour. But intelligence is hard to define and, being reflected in a wide variety of activities, lacks agreement on ways of assessing it (Bradshaw 1997, p192). The idea has been put forward, nevertheless, that by itself Neanderthal's EQ need not mean a lower intelligence, but it suggests that it could have been (Klein and Edgar 2002, p180).

Equally difficult to judge is the relationship of the brain to the vocal mechanisms. Where the language-associated areas [Broca's and Wernicke's] can be identified, the control and exploitation of the means of speech can be assumed: though through cranial shape and form, Cro-Magnons could be expected to have this connection, for Neanderthals there is no such assurance. Through archaeological assessment of brain organisation, however, there is a suggestion that, by way of the domain-specific nature of the Neanderthal brain, a quite different vocal means of communication might have occurred. A form of singing representing a variety of expressions of feeling, different areas of the brain connecting with

the vocal apparatus, is thought possible. Being quite different from speech giving rise to language, it would have come about through there being a lack of the cognitive fluidity for the interlinkage of different parts of the brain (Mithen 2005, pp232-233, 266-267). Whilst such 'singing', in the form it is suggested, of humming is related to the imagined way of life of not only Neanderthals but their ancestor species (*H. ergaster* and H. *heidelbergensis*), the justification is essentially speculative and not very convincing.

Attempts have been made to link cranial, and so brain size and form to the stage of maturity reached at the time of birth of Neanderthals, the wider pelvis allowing for a larger foetus and longer period of gestation and consequent reduction of post-natal brain development. On various accounts this has been discredited (Stringer 1993, pp86-87), but there remains scientific and archaeological evidence, relating to incisor teeth formation in particular, for rapid rate of maturity in young Neanderthals which might also be related to a high rate of adult mortality (Kelley 2004, p905).

So much of what is discussed at the biological level is speculative but archaeological finds – the artefacts – give a different perspective and one where the evidence is of actual activity and life style.

The artefact assemblages made by late Neanderthals come, for the most part, into the Mousterian culture and using Levallois techniques. Dating from about 250 thousand years ago in Europe, this tradition follows the Acheulean of the Lower Palaeolithic period, the large hand-axes and simply structured flakes being superseded by a limited variety of specially struck blades, some hafted onto handles of wood (Palmer 2000, pp130-133), adhesives containing haematite are recognised as being used to attach stone to bone or wood (McBrearty and Stringer 2007, p794). The culture of the Cro-Magnons is recognised as Aurignancian or Upper Palaeolithic, within which blades were purposefully struck and worked on to produce a wide variety of more refined tools, including chisel-ended burins, together with instruments made from other materials such as bone and ivory (Klein and Edgar 2002, pp189,232). The traditions throw light on the ways of life of the two species – similar in purposes of hunting and killing, but different in style and achievement. Neanderthals must have attacked their prey at close quarters (Palmer 2000, p132), whereas Cro-Magnons are judged to have used knowledge of locations and routes of the prey they sought, and attacking from a distance, but in each case, the activity required

planning and skill and communications, though at quite different levels of sophistication (Stringer 1993, p166). Neanderthals were perhaps 'unsophisticated' in their diet – not being 'specialised hunters' where “specialisation equals modern” - but when considered in such contexts as availability and population density, this may be a poor assessment (Speth 2004, p521). The search for artefacts has revealed the nature of the social sites occupied at the time. Certainly each used caves for shelter, but whilst the Cro-Magnon sites show ‘ruins’ and hearths, no indication of Neanderthal ‘houses’ with large formal fireplace have been found (Speth 2004, p520). Nevertheless, wherever the Neanderthals lived, it seems, through a study of injured but healed bones and diseased joints in mature adults, that in some situations at any rate, there was an element of caring within a group (Palmer 2000, p119). Whether or not Neanderthals practiced cannibalism is debatable. Evidence based on a comparison of broken and butchered human bones found with numerous deer bones similarly treated and together scattered in a Mousterian site, suggests that human flesh, fat and marrow had been included with animal flesh as food at some time, but such examples are rare and it is thought that “Neanderthals probably did not eat each other routinely” (Klein and Edgar 2002, p200).

Even though the 'humanity' which the two species shared is clear, there is a view that Neanderthals seemed to reveal a simplicity or an absence of activity involving thought-out and completed processes – a lack of the sophistication shown by Cro-Magnons. For some, such a statement epitomises archaeology's “deeply entrenched orthodoxies” (Speth 2004, p519), and a deeper look into that sophistication shows evidence of an element of conscious thought expressed by archaeologists as symbolism which may have been stimulated by their mutual contact, in both Neanderthals and Cro-Magnons (d'Errico in Gamble 2007, p46). Nevertheless, symbolism, recognised as an essential for language as distinct from speech, is associated with Cro-Magnon culture as seen in forms of art, not found with Neanderthals.

Radio-carbon dating has established that the artists of the earliest cave-paintings in Western Europe [at Chauvet: some 31-32 thousand years ago] were Upper Palaeolithic Aurignacian people who left, in addition, numerous meticulously carved ornaments. Archaeologists are sure also that Mousterian culture “has provided nothing to compare to the Aurignacian paintings, engravings, figures and beads” (Klein and Edgar 2002, p266). A few objects are reported as claiming symbolic significance for Neanderthals such as the

piece of volcanic stone known as the Berekhat Ram figurine, which some imagine represents a deliberately modified female form, but they are “so rare and so varied in nature” as to be unconvincing (Mithen 2005, p229). There is a culture, however, discovered in Western Europe and associated clearly with Neanderthals, which is very close to the Aurignacian of the Cro-Magnons. This is the Châtelperronian culture in which the artefacts include bone implements and ivory, shell and teeth pierced as pendants or beads, together with ‘hut emplacements’. Such a cultural change suggests, for some, one expression of symbolism independently showing itself through invention, but, for others it represents the last Neanderthals in Europe “imitating the symbolic … without understanding the power of symbols”, imitation being at the centre of Neanderthal culture as the key to the passing on of traditional tool making through the generations (Mithen 2005, p232). Though controversial, a palaeobiological view is that the evolutionary principle of convergence is evident, some Neanderthals perhaps having “cultural capacities on a par with those of early modern humans” (Conway Morris 2003, p281). The dating [about 35 thousand years ago] being much the same as the Cro-Magnon Aurignation culture, suggests to archaeologists that two independent strands of a similar culture existed at the time (Stringer 2011, pp87-89). Another aspect of symbolism recognised by archaeology is in the purposeful, even ritual, burial of the dead. It seems as if this was not usual amongst Neanderthals as it was the Cro-Magnons where it is associated with personal ornamentation (Klein and Edgar 2002, p266), but it did occur perhaps under particular circumstances (Conway Morris 2003, p278).

A widespread observation, described variously as “a great outpouring of creativity” (Boyle and Middleton (eds), 1991, p87), “an explosive appearance concomitant with the arrival of anatomically modern peoples sometime after 40,000 years ago, of art, culture and aesthetics” (Bradshaw 1997, p185), or the “Great Leap forward” associated with “the physical evolution of our ancestors’ brains (Ehrlich 2000, p107), for some leads to the suggestion that “Wherever the archaeological evidence is reasonably complete and well dated … it implies that a radical transformation occurred about 40,000 years ago” (Lewin 1993, p122). “The dawn of human culture” epitomises the contrast between the Upper Palaeolithic and all other cultures that preceded it (Klein and Edgar 2002, p261). The source or origin of the symbolic explosion in art and burials is conjectural, but the evidence is that the behaviour it promoted “spread rather like a virus amongst the population” (Stringer 1993, p218).

The relevance of interbreeding between Neanderthals and Cro-Magnons is discussed in this connection, seeking evidence from ancient DNA. The nearly entire Neanderthal genome, recently resulting from widespread research, has shown a Neanderthal genetic input into the genome of *Homo sapiens*, of about 2% and may have resulted from interbreeding in North Africa or the Middle East some 60 thousand years ago, rather than in Europe 35 thousand years ago. However, it has been recognised that fertile offspring are unlikely and also that fossil material can only provide "an appropriate reflection on real-world complexities" (Stringer 2011, pp192-193).

In the search, therefore, for the criteria of uniqueness of the present-day human species through the distinction of Cro-Magnons from their contemporary Neanderthals, the uniqueness of *Homo neanderthalensis* has also emerged. The differences recognised, albeit few, though clear from current knowledge at any rate, are drawn in relation not only to their contemporaries but also to the earlier *Homo* species. These rest on observed differences that go beyond mere variations, together with consistency through geological time, which is what the designation 'species' implies. Following in the wake of Linnaeus, the eighteenth century originator of biological taxonomy, Lamarck, writing some 50 years before Darwin's *Origin*, had defined species as "every collection of individuals which are alike or almost so, and … that the regeneration of these individuals conserves … and propagates it in continuing successively to reproduce similar individuals" (Lamarck in Moulton and Schifferes (eds), 1960, pp247-248). In 2007, when Linnaeus' birth was being commemorated, though it could still be said of species that if a population has a particular characteristic, and that is shown to be inherited, it is taken as evidence of a unique evolutionary history, which would qualify the population as a distinct species, the overall concept of species resting on "the idea of diagnosable differences" (Whitfield 2007, p251). The Neanderthals' diagnosable differences amounted to their particular facial, throat and cranial features together with the apparent limitations in their tool-making, exploitation of materials and methods of communication. With these, however, went a different way of life – one that went distinctly with the species *Homo neanderthalensis*. The physical differences the Cro-Magnons possessed - the clearly defined facial, throat and cranial features of modern humans – are, in the same way, associated with the cultural differences, of precision and innovation in tool and object making, the wide use of materials, 'ritual' burials, communication by language, together with artistry and invention

as expressed through symbolism. A way of life, fundamentally similar to, yet distinctly different from, other species, but characteristic solely of the species *Homo sapiens*.

Homo sapiens - The Individual

Whilst archaeological evidence has, as shown, provided biology with a means of establishing the uniqueness of the human species, it has also provided a glimpse of an aspect of humanness hitherto unobserved. As examples of symbolism reflected in artefacts left by Cro-Magnons in the culturally creative Europe of 30 thousand years ago, cave art and burials of the dead have suggested to research archaeologists, a particular interpretation – that of bringing to light evidence of thought specific to an individual person. It has been acknowledged that it would appear that most of the images at Chauvet were the work of a single artist, the presentations from various angles showing the "same singular style" (Klein and Edgar 2002, p260). From the quite different view-point of burials, it has been observed that "one who dies lives on in the minds of others as an 'I'", and so the act of burial was perhaps "one of the greatest leaps forward for humanity" (Palmer 2000, p120). The question then arises as to whether uniqueness, heretofore recognised in the broad sweep of the 'species', should be sought, alternatively in the confined unit of the individual. The individual human being is also common ground for biology and theology and equally a place for the disciplines to meet. Genome studies at the turn of the twenty-first century have shown that, where the text of the 'Book of Life', previously believed to be "virtually identical for every person on Earth", has had to be reviewed, "For now, the realization that we are all reading from individual texts has already altered scientists' understanding of humanity – and of the library of unique volumes that make up the human race" (Check 2006, p1086).

With the intention of finding grounds for integration of science with theology through human uniqueness, the search then has to progress from the interpretation of the concept as relating to the human species to one centred on the human individual.

The Uniqueness of the Human Individual

In centring the interpretation of human uniqueness on the human individual, a review of the interaction of science and theology in the light of the historical background is a valuable preliminary, and is a theme dealt with in some depth by John Polkinghorne in his book *Science and Theology* where he offers "a potential text book in the rapidly growing area of science and religion studies" (Polkinghorne 1998, p1). As a former professor of mathematical physics and also an ordained priest in the Church of England, he draws on a wealth of experience from each discipline, both in research and teaching and as a minister and writer. This breadth of understanding comes clearly through, early in his book, when the nature of science and theology together with their interaction are illustrated through critical incidents from past centuries. He also gives perspective to this interaction in his section on Humanity as referred to earlier, where human individuality has a special role – that of providing "one of the most important meeting points of scientific and theological insights: the nature of the human person" (Polkinghorne 1998, p49). Furthermore he is convinced that investigating the interaction between science and theology has to be taken seriously and with intellectual integrity and openness, posing the broad issue as a question: "are science and religion conflicting or complementary?" (Polkinghorne 1998, p4).

Citing the apparent conflict of scientific and theological views evident in the debate between Thomas Huxley and Bishop Wilberforce, following the publication of Darwin's *Origin of Species,* Polkinghorne shows that science and theology were as confused by the issues as were the participants (Polkinghorne 1998, p6-8)! For each discipline certain beliefs had proved to be in need of radical revision before interaction could be achieved. Through a review of aspects of contemporary science, the traditional portrayal of truth being established through theory arising from experimental results, had been shown to be misleading and unreal. In a similar way traditionally-based aspects of Christian theology had been shown to offer only partial truths and simple flat interpretations. He advocates, for each, a search for verisimilitudinous knowledge through critical realism: "Both disciplines are concerned with the search for motivated belief and their understandings originate in interpreted experience." (Polkinghorne 1998, p20). Polkinghorne's observation is that the two disciplines are "intellectual cousins under the skin" (Polkinghorne 1998, p20).

However, cousins have disagreements and this leads the discussion to Barbour's classification (Barbour 2002, p2) of varieties of interaction and the need for a fresh outlook

on *integration* (Polkinghorne 1998, p20). Whilst conflict arises where one discipline threatens to take over the concerns of the other, as when scientific theory challenges theology's traditions, one solution is *independence* for each: for any interaction between the two, some form of *dialogue* is necessary as a meeting ground. Polkinghorne sees, however, the need for a more positive and deliberate form of interaction. In his view there is a need, firstly, for c*onsonance* between the two – the pronouncements of each must "fit together without strain" and then for an *assimilation* – a merging together, "neither being absorbed totally" by the other (Polkinghorne 1998, p22). But even then, neither will necessarily have relevance to all aspects of interaction and for any real success both science and theology need deeper insights into each other's concepts and a revision of their own (Polkinghorne 1998, p118-119).

In focusing his proposals on the concern of both disciplines on humanity (Polkinghorne 1998, ch.3), Polkinghorne reiterates the common ground found in the nature of human beings, which he relates to the possession of self-consciousness. Biologically, this is associated with humanity's evolution from the hominid predecessors, recent advances in neuroscience and today's knowledge of the human genome. Theologically it is identified with religious experience associated for Christians with Jesus Christ, "the perfect archetype of a truly human person" (Polkinghorne 1998, p50). But consciousness – for humans, self-awareness – though forming the basis of knowledge and experience, is far from being fathomable for either science or theology. Interpreting it as "emergent property", associated with the complexity of biological systems (Polkinghorne 1998, p60), may be plausible, but is found to be inadequate as a description of the 'self'. On the other hand the soul acting as the "carrier of the self" (Polkinghorne 1998, p62), may have satisfied Christian doctrine, but it lacks the essence of "the real me" (Polkinghorne 1998, p63). For many, the issue is one of human determinism or free will (Polkinghorne 1998, p57), treating it as a basic human intuition, and thus providing theologians with a metaphysical resolution. Though science coming up with theories of emergence through biological systems (Polkinghorne 1998, p60), or the presence of microtubules linking the brain with the mind (Polkinghorne 1998, p62), in Polkinghorne's view "it is clear that today we are still far away from resolving our perplexities about the origin and nature of consciousness despite its providing the basis of all knowledge and experience" (Polkinghorne 1998, p62).

In concluding the discussions, Polkinghorne sets the interaction between science and

theology in a wider context (Polkinghorne 1998, ch.8). If the two disciplines have in common "the quest for true understanding, seeking to attain knowledge through motivated belief" (Polkinghorne 1998, p128), then their differences lie in their controlling factors: on the one hand, human beings transcending the physical world and putting it to the test; on the other hand God transcending humanity but not putting it to the test. Seen as occupying opposite ends of a spectrum of rational human enquiry into reality, Polkinghorne suggests that in between "lie the realms of human personal encounter with reality" (Polkinghorne 1998, p128). It is here that subjects in the fields of other disciplines are found to exist and it is through these that reconciliation and integration will ultimately be accomplished.

Having thus adopted *interaction* as the keynote to his hopes for a better relationship between science and theology, Polkinghorne goes on to make clear how he considers this might be achieved. It is the suggestions emerging in his book by virtue of his wide view as a theologian-scientist, of both disciplines, that provide a basis for the discussion that ensues - a reinterpretation of the significance of human uniqueness compatible with concepts within the two disciplines, at the beginning of the twenty-first century.
From his arguments it has become clear that, first and foremost, there is a need for a recognition by both disciplines of the commonality of their quest for true understanding together with a willingness to engage in intellectual openness with a truly serious intent. Then there must be a revision of conventional attitudes in regard to their differences but also to the relative values of tradition and novelty, carrying the best of the former through to enlighten the latter. For interaction, disciplines need to recognise the limits of their particular fields of study - inappropriate encroachment stimulating conflict. Nevertheless, as he has shown, it may well be that sources of interaction are found in other disciplines. Whilst his own version of interaction was shown to involve dialogue in anticipation of *consonance* and *assimilation,* Polkinghorne has also laid stress upon the essential requirement of a common ground on which the disciplines can meet. He has given it as his conviction that the best of all meeting points is the human being, each discipline sharing in a common concern for humanity.

With these principles as a guide in the search for the possibility of human uniqueness as a concept for a means of integrating science and theology, the focus proposed will transfer from the uniqueness sought in the history of past centuries of humankind, as judged

collectively as a race, a genus or a species, to humans as individuals viewed in the light of knowledge and innovation emerging from the past into the twenty-first century. Maintaining as before the specific disciplines of Protestant Christian theology and biological science, one aspect of each, showing particular relevance to humanity, has been selected. Each of these will be presented not as one challenging the other, but side by side as independent yet comparable in their significance.

With Polkinghorne's 'criteria' for interaction, each will be shown to meet with his requirements of representing a “quest for true understanding” (Polkinghorne 1998, p128), and the enabling of profitable dialogue through the common ground of the nature of the human person (Polkinghorne 1998, p49). The necessity of a radical revision of conventional attitudes will be shown to be basic to each discipline, as will the retaining of valid traditions as a foundation for novelty. The limitation placed by each discipline on the respective themes will lead to the recognition of the need to incorporate associated disciplines.

The chosen theological theme is that of the Christlike God, the concept of John V. Taylor whose book with this title is discussed by David Wood in his biography *Poet, Priest and Prophet* (Wood 2002). As a biological counterpart the theme of the Human Genome is selected, as explored by Barry Barnes and John Dupré in their book *Genomes and What to Make of Them* (Barnes and Dupré 2008). To enlarge on each theme, contributions from three fellow professionals will be presented to relate the discussions to wider fields of study. The theologians have been chosen for their views on the interpretation of creation as *kenosis* outlined in their contributions to Vanstone's *The Work of Love* (Polkinghorne (ed.), 2001). Keith Ward's essay takes on a cosmological perspective which is extended to include the evolution of life in the concept of creation by Arthur Peacocke, whilst Paul Fiddes expresses a clearly theological view. The biologists have been selected for their particular interests in molecular science. Paul Ehrlich's contribution comes from his book *Human Natures*; Gabriel Dover is a geneticist with a keenness to relate current knowledge to earlier theory as shown in his *Dear Mr Darwin*; John Odling-Smee has, with his colleagues, devised a way of relating the biology of mankind to its cultural influence on selection, in the publication entitled *Niche Construction*.

CHAPTER VI: THE CHRISTLIKE GOD

Through the archaeology of prehistory, it has been possible to present a picture of the only extant species of the genus *Homo*, in a background of a variety of extinct hominins, together with a plausible way in which biological evolution could have brought this about. Out of this study there has been a glimpse of hominins – particularly *Homo sapiens* – as individual human beings. The thesis proceeds to consider this concept, by science and theology, not by way of a challenge from the one to the other, but through a presentation, illustrated independently by each discipline, of a twenty-first century understanding of human individuality, starting with a theological concept founded on a Christlike God.

A theological concept of the nature of God as of relevance to human individuality in the twenty-first century

Introduction

The book, John V Taylor's *The Christlike God* (1992), chosen for its theological concept of a view of the nature of God being revealed by the individual human person, Jesus Christ, is discussed in depth by David Wood in his biography of the author, *Poet, Priest and Prophet* (2002). The value of the concept of the Christlike God, is, in the context here of human individuality, that the humanness of the person Jesus Christ may be seen to relate both to the one 'individual' God and each individual human being.

The Christlike God

In Wood's words “taking seriously the revelation of God's nature in Christ” has occupied his [John Taylor's] attention from his earliest days (Wood 2002, p183). In his biography Wood shows that at no stage in Taylor's life and ministry as pastor, missionary and Bishop, was this concern not central to him. Recognising John Robinson's *Honest to God* as symptomatic of the contemporary crisis of faith in the 1960s (Wood 2002, p104) and reflecting the earlier ideas of theologians Bonhoeffer and Tillich, Taylor was quick to relate his ideas for the way ahead to his own experience in work overseas. Making known his interest in the secular school of theology through missionary publications such as *CMS News Letters*, his answer to the opposition aroused was along the lines of “we are to accept and welcome what God is doing and working *with* God rather than *against* God” (Wood 2002, p106). But this was but part of the reorientation which he advocated for Christians.

If, as was being suggested, secularisation represented the collapse of ecclesiastical totalitarianism, then the way ahead must involve humans in a struggle to be responsible for their own destiny, for which "we need a God who gives the divine self to enable us to be truly human" (Wood 2002, p107). The gospel remains for the salvation of persons, not only in the hereafter but in *this* world. Fundamental to all this is the certainty that a religion is traditional, maintaining continuity of convictions, but at the same time responsive to current influences and tensions in the real world where those convictions are proclaimed (Wood 2002, p123). What has to be coped with, then, is the tension between conservation and development – between the past and the future. Furthermore, there can be no exclusions: within this concept, everyone must be included. Relating this inclusiveness to the provision of salvation for everyone, stems from John Taylor's core belief: "The incarnation of God in Christ is not . . . an isolated crossing of the gulf between human and divine, but the establishment of the fact that there is no gulf." (Wood 2002, p124). The theology such a belief proclaims is radical and as such demands a new concept - the revelation of God's nature revealed in Christ and thus of a Christlike God. It is this concept, developed by Taylor in *The Christlike God* (1992), that is to be taken here as a theological outlook, combining tradition with current response and centring on the human individual, for twenty-first century Christians.

The concept of the Christlike God is not claimed by Taylor as a novel concept or even a new idea, but it clearly represents an adjustment to the twentieth century picture of God. Whilst being encouraged by his contemporaries, Robinson and Bonhoeffer (Wood 2002, p184 : Taylor 1992, pp51&61) he draws also on the similar ideas of Luther whose christology has such significance for him (Wood 2002, p194). The adjustment called for, required, in his view, a replacement of the concept of the nature of God in traditional orthodoxy with a new and radical one; one where the assumed gap between divinity and humanity is shown to have no reality - "the infinite and finite finding common ground in human beings" (Taylor 1992, p115). In this Taylor shows the support he has gained from Moltmann's concept of the whole of creation, quoting from his *The Trinity of the Kingdom of God* - "Has God not therefore created the world 'in himself', giving it ... finitude *in* his infinity?" (Taylor 1992, p192).

His own interpretation of how replacing the traditional concept of the nature of God with a radical one, derived from the self-giving of God revealed in the human person of Jesus

Christ, is made clear and discussed in the *Christlike God*.
Earlier philosophies established what Taylor sees as axioms which stood as bulwarks, defending the absolute uniqueness and perfection of God. These bulwarks – the inaccessible God, the one God, the unchangeable God and the unaffected God (Taylor 1992, pp102-139) – forbade, in his terms "declarations in which New Testament writers passed on ... the apostolic experience of Jesus Christ" (Taylor 1992, p102), that through his humanity, Jesus revealed God and nothing less than God. Asserting that the axioms and the Christian claims were not 'centring' on common ground, they were, nevertheless, the source of conflict.

For centuries, the inaccessibility of God was confirmed by the assumption that any concept of God was beyond the grasp of the human mind. With this went the concept of a gulf between the Absolute and the Creation – God and something 'less than God'. This implied that God was revealed, and acted, through Jesus Christ in a form 'less than God' (Taylor 1992, p110). But, in regard to humanity, the biblical image of God in human nature suggests a common ground where the finite and the infinite *do* meet.

The philosophical idea of the 'one God' implies that God is indivisibly himself without any distinct attributes. A contradiction, Taylor points out, arises here, with the Christian gospel's narrative of the human experience of God in the humanity of Jesus Christ and "calls for some modification of the bald assertion that God is one" (Taylor 1992, p119). That human creatures attain their highest fulfilment "only as persons" (Taylor 1992, p121), though needing mutual exchange with other persons, suggests that God, who transcends the human idea of human personhood by being more than person, does not lack this mutual exchange, possessing it within the pure oneness of himself. This, in his view, rather than being a denial of indivisibility, represents a glimpse into the depth of transcendence.

The concept of the unchangeable God, whilst having a Biblical and a classical origin, being interpreted as divine immutability and equating existence with being inert or at rest, cannot, as an image of God, be sustained. It is incompatible, Taylor maintains, with God's immanence within his Creation, which is itself in a state of flux "where humanity includes the historic reality of Jesus ... thought of both as truly a man and as truly God" (Taylor 1992, p129). An alternative way of reasoning this, he suggests is found in the concept of translation – God, not altering to become something 'other' but 'translating' himself (Taylor

1992, p130) - “As with the divine immanence in all creation, so now with the incarnation.” (Taylor 1992, p134). The two aspects of Jesus – the human and the divine – as seen thus as two equally true ways of understanding the human being that God became, “by becoming nothing but man God disclosed the whole truth of himself ... [that] we shall ever see” (Taylor 1992, p135).

As for the unaffected God, amounting to the dogma of divine impassibility, the possibility of God not being affected by any eventuality, passion, emotion or suffering, or limited in any way, has, in Taylor's view, led to many misrepresentations in Christian theology. Implied within the concept is a moral indifference by God to the world. This suggests a divine nature that is unmoved and untroubled by what seems to belong solely to the corporal side of human beings and, totally omnipotent – using his own freedom to do what he wills (Taylor 1992, pp135-139). An “undercurrent of unease”, as Taylor puts it, “has always accompanied the traditional assertion of God's impassibility and has in our day gathered to a rejection of it” (Taylor 1992, p137). What is missing is the 'heart of love' (Taylor 1992, p139) – the inexhaustible self-giving of love, expressing his very essence, his nature, even to adopting humility in regard to created things, human beings in particular. Altogether then, as Taylor sees it, “The church has prevaricated for two thousand years rather than accept the implications of the gospel concerning the nature of God.” (Taylor 1992, p140), epitomised in the words attributed to Jesus in the Fourth Gospel – 'He who has seen me has seen the Father'. The thirty or so years of the incarnate Jesus, by being regarded as a period of exile would seem to ignore the essential element of orthodoxy, which is “That God the Son has never put off the humanity that was his in Jesus Christ.” (Taylor 1992, p141). It was, rather, God's Word, his self-revelation, that became flesh in Jesus Christ. Herein lies the reversal of the conventional concept of status and authority emphasised by Jesus and recorded in the Gospels – a new insight into the nature of God through the revelation that was Jesus, the Word.

Thus, as Wood shows, not wishing to abandon the traditions, nor disclaiming them as heresy, Taylor displays their build-up from Early Christianity, through the adoption of Greek ideology to medieval opposition to change. He explores a series of paradoxes, each of which has to be recognised for what it is – an *a priori* theological formulation unsupported by New Testament scripture (Wood 2002, p191). From earliest times the Absolute was uninvolved in the creation and untouched by it, *the Logos* alone linking transcendence with

immanence, the truth of the oneness in Christ in human experience losing its reality in the metaphoric doctrine (Wood 2002, p189). It was the adoption of Greek metaphysical concepts of the divine as without passion or feeling, wholly self-sufficient, immutable and static, that made an interpretation of the incarnation, as revealing the suffering nature of God, implausible if not heretical (Taylor 1992, pp136-138).

Heavily influencing Taylor in identifying the unreality of fixed assumptions of God's nature was Luther's interpretation of Jesus Christ as the revelation of God – giving preference to fact over theory. "For this purpose he [Christ] came down, was born, lived among men, was crucified and died, so that in every possible way he might present himself to our sight." (Wood 2002, p193). The distinctive mark of Christian belief, for Luther, was the cross: it was God incarnate who suffered human shame, humility and death in the crucifixion. Earlier ideas of God as possessing divine impassibility and inability to suffer, had obscured biblical revelation (Wood 2002, p196). Taylor himself, however, went one stage further. For Martin Luther, at the historical moment of incarnation everything changed – including the very nature of God: the God of tradition became, only then, the God of novelty. For John Taylor, the event of the incarnation revealed God as "eternally, always everywhere" (Wood 2002, p196). The revelation then was not of a God in disguise as a human being, nor adopting a humble role in service to humanity, but the nature of his very essence (Wood 2002, p196). The only means by which God discloses himself to humanity was and is as 'one of us', just as the historic Jesus was, lowly, humble, a servant and a sufferer of obscurity, shame and pain.

Relating this to the traditional omnipotent, omniscient, super-potentate, masterminding the whole of creation including the destiny of humans, Taylor accuses theological ingenuity of failing to face up to the plain truth that "the Christlike God is not the God most of us want most of the time . . . and not the God some of us want at any time." (Wood 2002, p196). Not, in truth, the quick-fix God intervening at times of distress, to soothe and salve, rescue and release of common belief, but an intellectual commitment to revising the received doctrine of God together with his real concern and sense of urgency. "If God was in Christ we have to come to terms with a God to whom it is natural to be humble, frustrated and at risk." (Wood 2002, pp196-7).

It is this term 'risk' from which the notion of vulnerability as applied to the divine springs.

Taken from Paul's Letter to the Philippians (Phil. 2.7.) by early Christianity, *kenosis*, as an explanation of the dual nature of Jesus Christ, made possible by the self-emptying of his divinity in becoming human, was resorted to in nineteenth and twentieth century traditional theology to fulfil the requirements of his being truly human. Wood shows that, as for John Robinson and Dietrich Bonhoeffer (Wood 2002, p201), so also for John Taylor, this interpretation was a mistaken concept of the divine, amounting to condescension on the part of God and a relegation of human nature to a dimmed-down edition of a divine one (Wood 2002, p186). How could this reveal to humanity the nature of God? Along with John Macquarrie, Taylor's christology holds that the revelation was of a *kenotic* God: "in God this self-giving is eternal reality, . . . the very essence of the divine nature" and that it indicates "none other than patient, persuasive, self-sacrificing, longing and hoping, suffering love" (Wood 2002, p202). Here Taylor may, once again, be seen to be reflecting Moltmann's conviction that in Jesus, "God does not become an ideal, so that man achieves community with him through constant striving. He humbles himself and takes upon himself the eternal death of the godless" who can thereby "experience communion with him." (Moltmann 1974, p.276). In so doing Jesus was "colouring all impressions of God" (Wood 2002, p187), and, as Taylor puts it, "evoked or produced significant new convictions ... concerning God" (Taylor 1992, p92). Those who followed him would, in the fullness of time, through his showing of *himself* to them, "never think of God without thinking of him" (Taylor 1992, p97). For what purpose could this divine love be claimed? As the creation of the universe expressed God's *kenotic* love, so it is his will that its ultimate destiny will express *theosis* – the divinisation of all that is created including humankind: through Christ's sharing in our humanity "we may share in Christ's divinity" (Wood 2002, p203). How then can each human person fit into this ideal?

Taking Adam as Everyman, Taylor recognises his estrangement from God as 'a hiding from God' through terror of the Presence (Wood 2002, p204), so that humans have made a God who is remote and too far away to be able to come face to face with. But, for him, Christ's stance in the world makes a mockery of a God being kept out of sight. "The decisive turning point in human history now demands of us a like turning." (Taylor, J. in Wood 2002, p204). Such a concept leads to the conclusion that of all creatures, human beings have the ability to respond to the demand and thus to the need to accept the responsibility of choosing, freely, whether or not to obey. The model is the unique Jesus: "John Taylor is in no doubt that Jesus ... is the God-given archetype of creaturely response to God" (Wood

2002, p205). As Jesus' association with God became the perfect partnership, representing God's eternal purpose, so his need for human companionship on earth reflected in a completely new way, the divine need for a human response to his love. Thus, “because God loves by sharing, it is God's will to act upon the creation, God's other, only in and through the processes of the creation by making it make itself. God's providence depends upon finding a channel, a medium, a partner and depends equally on the partner's response and co-operation” (Wood 2002, p209). For Taylor “this self-renouncing Christlike power, in the weakness of self-chosen limitation, is set upon the venture of opening out that love into a relationship with what is not God but a true Other ... the object and heir of that love” (Taylor J. 1992, p234). In John Taylor's vision, such a commitment has to go beyond generalities, for God deals personally and the responsibility lies, as it did with Jesus, with the individual human person.

In summary then, what is being proposed for the twenty-first century, having as its starting point Jesus, the historic human person, is thoroughly traditional, bearing the beliefs held by Christians through the changing periods of the past two millenia. In developing this as comprehensible doctrine for the present time radical revisions are crucial. There must be a revision, in the first place, of the role of humanity in relation to God. In the absence of the former 'chasm' between God and Creation, humanity should be recognised as 'common ground', the meeting point of the infinite with the finite, the revealing medium for the understanding of the *humanness* of God, and thus a revision of the concept of the Nature of God. Such a revision should refresh the relationship of humanity to God through Jesus Christ. For Taylor, this means a coming face to face with God, as people did with Jesus, a freely given response to God's offer of partnership as Jesus had with his disciples and a sharing in the humanness of God as revealed in the human life of Jesus. Calling him the Christlike God is, in Taylor's own words “the supremest truth we can ever learn about his nature” (Taylor J. 1992, p289). It is this theological concept which, in relation to a comparable scientific one, opens up the possibility of a measure of inter-disciplinary integration through human uniqueness.

This concept, for Taylor, has arisen from a revision of the notion of *kenosis,* seeing it not solely in relation to Jesus Christ, the human person, but to God, the Creator of humanity. Putting together the interpretation of this self-giving in Creation as a Work of Love (the theme of William Vanstone's *Love's Endeavour, Love's Expense)*, a group of theologians

and scientists, under the editorship of John Polkinghorne, with their diverse backgrounds, contributed to *The Work of Love: Creation as Kenosis* (2001). Three of these essays have been selected for discussion in relation to the theme of the Kenotic Nature of God.

Keith Ward's *'Cosmos and Kenosis'*

The chosen quotation from Vanstone's *Love's Endeavour: Love's Expense* with which physicist Keith Ward introduces his essay, provides a reality to the kenosis of God, as he sees it, as borne out in the cosmic concept indicated in his title.

> [In the progress of love] each step is a precarious step into the unknown, in which each triumph contains new potential for tragedy, and each tragedy can be redeemed into a wider triumph (Vanstone (1977) in Ward in Polkinghorne 2001, p152).

As a physicist-theologian, Ward recognises the precariousness of creation, yet in its culmination there is for him a certainty which makes it ultimately worthwhile.

To give this concept a contemporary setting which his scientific approach deserves, Ward examines the theological background from which the idea of creation as *kenosis* may be seen to have emerged and from which the whole notion of the nature of God has been interpreted. Adding to the significance which Bishop Taylor gives to the traditional concept of God in Christianity, he stresses the eternal nature of God (Ward 2001, p152), relating this to the classical view of God as being unrelated to time and immutable – unchanged by any event, even the incarnation. Traditionally, the perfect nature of God indicated, a self-contained isolation exclusively infinite and *unable* to be finite or to change or to suffer – in fact, to be imperfect. Thus, for God to be human in Jesus meant that human nature had to be 'assumed' by the divine person, the understanding of which is beyond human comprehension (Ward 2001, p153). The Lutheran idea, blossoming in the nineteenth century, challenged this on the grounds that the event of the incarnation represented a radical change – a change, that is to say in the Word of God [the "Word becoming flesh"] rather than in the nature of God. The importance of this concept lay in bringing to the human situation Luther's sense of the true sharing by God in human suffering. Furthermore, the Renaissance view of human freedom, centred clearly on the individual, could then be associated with the nature of God in relation to humanity, in a new way. "God is reconceived as the most creative, free, changing, and individual reality, rather than being seen as a timeless pure Form." (Ward 2001, p155). In this light, God could be

considered as unable to *not-relate* to creation through *kenosis* in the incarnation and so to human individuals.

For contemporary thinking, it seems to Ward, the idea of God, though self-limiting in Christ, yet remaining as the God-head, self-sufficient and impassable, is not in line with the notions of divine omniscience and the divine state of eternal bliss. Bliss suggests feelings and omniscience implies knowledge of feelings from every kind of experience both of happiness and suffering. Far from such experiences denoting imperfection, it would be imperfect *not* to participate totally. From this it follows that "If one takes that seriously, then one may say that not just the incarnation but the creation of conscious and rational beings itself is a *kenotic* act on God's part." (Ward 2001, p157). What is suggested here is that complete control is what is being given up, the freedom of created beings has to be acknowledged and it follows then that the action of creatures, independently or communally, must be considered as having a role in determining the future of creation. The essence of the *kenotic* love of God therefore needs redefining in terms of creaturely activity in an ever changing world, as an integral part of the seemingly entropic universe. The redefining, in Ward's view, must include not only self-giving but self-realisation, for "the creation of finite agents with a real degree of autonomy adds to God himself the possibility of co-operating with them in creative action" (Ward 2001, p158). From the cosmic perspective, this means the conservation of all the values of created existence in its consummation in God for ever more.

Whilst this might well be considered an idealistic and abstract concept, Ward gives the view that in the light of Jesus – for theologians the disclosure of the nature of God – there is a foundation of reality in his sharing in every aspect of human life, in the cross and then the resurrection (Ward 2001, p160). Taken not as a necessary condition of cosmic *kenosis*, the incarnation then represents rather, the will of God to exercise the divine power in co-operative sharing in human experiences together with inspiring new creative action. In so doing God's nature becomes apparent through self-revelation: "the revelation of God in a human person" (Ward 2001, p162). For Ward, a sort of double *kenosis* can be felt: that of Jesus emptying himself of pride and egoism and being thus filled with the spirit of God, together with a divine self-emptying of perfect bliss and autonomy: a binding together of both in one.

Out of this concept there emerges what he calls a “three-fold manifestation of the nature and activity of God in relation to the created universe” (Ward 2001, p163), which gives a theological perspective to his cosmic concept. Firstly, in the caring for those about him through healing, befriending and forgiving Jesus reflected the compassion and persuasive love of God. Ward sees this as *kenotic* love exercised towards creation and humanity in particular. Then comes *enosis*, the uniting of human persons with the divine, as was Jesus' fulfilment of the will of God, through the Holy Spirit. The third, representing the final purpose of God for creation, looks to the future: the sharing in the divine life in the concept of *theosis*, embodying the belief in the transformation of the universe as manifesting the beauty and goodness of God.

As far as humanity is concerned, in Ward's view, human beings will give conscious expression to this transformation as “God in Jesus foreshadows in one human person, the divine purpose for all creation”. But that purpose is to be gradually worked out in the history of this planet “by the inclusion of many persons within that divine-human unity.” (Ward 2001, p166). The purpose then, of God's suffering through his allowing freedom to all creatures, is in order that they should share, through his kenosis, in the creative freedom which characterises his divine nature.

Arthur Peacocke’s *‘The Cost of New Life’*

The way in which the working out of the divine purpose of creation, visualised by Keith Ward as culminating in a divine-human unity, is pictured by Arthur Peacocke in the development on earth of organic life. In his essay, he first of all sets out his proposition as a biologist-theologian, with what he calls the 'epic' of evolution (Peacocke 2001, p211). As he sees it, “The perception that in the act of creation God may be conceived of as, self-offering and self-limiting: . . . and thereby becoming vulnerable to the history of the created order”, must have reference to the evolutionary character of the actual process of creation (Peacocke 2001, p21). Thus, for him, the whole of the universe – from “the 'hot big bang' to the arrival of *Homo sapiens* on planet Earth” (Peacocke 2001, p21) – came into being as an evolutionary process. It is his intention in his essay, to show how God's relation to the 'epic' was truly *kenotic*, the evidence lying in the interpretation of observed biological evolution.

Whilst changes in the state of inanimate matter within the universe reveal one form leading to another in apparent progression, it is the emergence of new forms of life that gives reality to the notion of a continuous creation. Not only is there genetic inheritance to give evidence of this, together with the universality in all living organisms of DNA sequences and proteins constructed of the same amino acids, that molecular biology confirms, but the fossil record going back "some three or so billion years" gives credence to the idea of "an inbuilt creativity" (Peacocke 2001, p22). This for Peacocke, as for Frederick Temple in 1885, is God making things make themselves - "an imminent Creator creating in and through the processes of the natural order" (Peacocke 2001, p23). The same goes for the 'natural' nature of biological evolution, with its evident patterns that are clearly part of the process, an interplay of 'chance' and 'law' [as in mutation and niche-control] constituting for the theist the realisation of God-endowed potentialities in creation. What has to be acknowledged, however, is the inevitable risk for the Creator, from the creation as it gradually takes shape (Peacocke 2001, p27).

Not only does biological evolution show patterns of development, but also, as Peacocke observes, significant trends (Peacocke 2001, p27) with which, if God is immanent in creation, theology has to comes to terms and, if accepted in *kenotic* terms, find illuminating. Tracing a set of 'trends' seeming to progress towards complexity and organisation, thence to sensitivity and its adaptive qualities, together with inevitable pain and suffering, he arrives at the significance of self-consciousness and language supremely manifest in *Homo sapiens* (Peacocke 2001, pp29-32). Judging the series as propensities of evolution, he raises the much debated question of whether, theologically, the overall significance is that it represents a deterministic plan with an eventual emergence of "self-conscious persons capable of relating personally to God" (Peacocke 2001, p33). He gives it as his own view that there are no deterministic grounds for theists to feel obliged to "invoke any special providential action by God" (Peacocke 2001, p33). Natural processes alone can account for the emergence of self-conscious persons – they are already God-given!

In these terms, then, Peacocke paints a picture as it were, of the epic of evolution encompassing the whole created universe, in the colours of biological evolution which are theologically acceptable. Nevertheless, since the essay is a contribution to the study of *Creation as Kenosis*, he illuminates the epic with its theological relevance: but now he says

“we must stand back and look at the whole panorama in relation to our understanding of God.” (Peacocke 2001, p35).

In reviewing that panorama with its immense variety of structure, processes and entities in relation to each other – drawing also on Genesis 1.31. - he recognises something akin to 'joy' and 'delight' for God in creation (Peacocke 2001, p36). But the 'darker' aspects have to be faced – the ubiquity of pain and suffering, provoking the question, was this the cost of bringing forth self-conscious free persons, by natural processes? He answers his own question by a reminder of how a Creator-God must be conceived as “giving persistence to everything and sustaining all in existence”, so that the processes of evolution are the “very action of God *as* Creator” (Peacocke 2001, p37). He maintains that if this is so, it must then be in the nature of God to suffer in and with Creation. This is the cost, it would seem, to God, dimly shadowed by humans in the experiences of existence. Relating God's suffering to the *kenosis* expressed in self-emptying and self-offering, the perception of God's nature as inherently that of Love, is given a reality that humans comprehend: “suffering is recognised to have creative power when imbued with Love” (Peacocke 2001, p38). Whilst interpreting this as part of God's intention – the bringing about of new creation through suffering – it is given significance and reality by the historic event of Jesus the Christ (Peacocke 2001, p39). Humanity, however, causes God to suffer in a very particular way. The *kenotic* love of God, giving freedom to creation, gives a distinctive freedom to self-conscious human beings – that of the freedom to reject God's creative intentions. Thus, the existence of the cost to God means the risk of there being no freely given response to his love. If so, then could this self-inflicted vulnerability be seen to have a divine purpose? Could it be that lovingly and willingly and with suffering, God's purpose is for “the greater good of a freely responsive humanity coming into existence with the created world” (Peacocke 2001, p41)? - perhaps, as Peacocke puts it, such a notion is “no more than a reasonable conjecture” (Peacocke 2001, p41). His answer to this lies in the Christian belief of Jesus the Christ's being the self-expression of God – a life in human terms of vulnerability and suffering. As in the title of the essay – both for Creator, creatures and for God in Jesus, this is the Cost of Life. In his own words,

> We see therefore that belief in Jesus the Christ as the self-expression of God in the confines of a human person is entirely consonant with those conceptions of God, previously derived tentatively from reflection on natural being and becoming, which affirm that God, in expressing divine creativity, is self-limiting, vulnerable, self-emptying, and self-giving – that is, supremely love in creative action (Peacocke 2001, pp41-42).

Paul S. Fiddes' *'Creation out of Love'*

At the heart of Paul Fiddes' discussion, as his choice of title shows, is that creation comes about through the particular nature of God expressed as Love. As a theologian he has chosen to clarify this aspect of the divine nature and it is in relation to the question of freedom – the Freedom of Love – that he gives *kenosis* as an alternative expression for God's voluntary self-emptying (Fiddes 2001, p172), and in relation to its bearing on God's suffering with creation (Fiddes 2001, p180). The characteristics that the concept gives to the divine nature are borne out in a studied and deeply theological perspective which contributes depth to the interpretation offered in Bishop Taylor's "Kenotic God" (Wood 2002, p202).

The essence of Fiddes' essay is the demonstration which the love of God in creation portrays, in theological terms, of the need of God to have that love satisfied, his vulnerability thereby and the requirement of a response from humanity.

In analysing the love of God in creation there is of necessity a task to be faced: it is that of clearing away some of the contradictions arising from traditional theology concerning a concept such as this, in which God is shown as having a need of what he has created and even of fellowship with personal beings outside of 'God's-self' (Fiddes 2001, pp168-9). That such a need implies an imperfection in God's nature is one difficulty, another being the type of love suggestive of *Eros* which classical Protestantism denies as being God-like by its self-realising objectives. Divine immutability is also put forward as a bar to the need for a response to that need: how can the God reckoned as "that than which nothing greater can be thought" (Fiddes 2001, p167), have need of anything in the nature of a response? Furthermore, where does humanity stand in this scenario? If the human branch of creation has a requirement to respond, what of human freedom? "On the one hand, God's love requires a world of free, responsive beings, while on the other if such a world is required it seems to be no longer able to respond freely." (Fiddes 2001, p178).

However, as Fiddes makes clear in his introduction, when the very nature of God is at the heart of such a debate as is here being prepared, "no human words about God can be a literal description of who and what God is" (Fides 2001, p167). But he claims that in

putting forward his proposals there is “a high degree of correspondence between human and divine love” (Fiddes 2001, p168). Furthermore, for Christians, the awareness of God as self-revealing, comes from the story of Jesus who is witness to, and in fact provides, the final manifestation of what is truly the nature of God (Fiddes 2001, p168).

For Fiddes, the debate must start with Love as understood in terms of human experience which, for him, gives grounds for a thoroughly coherent concept of “divine self-fulfilment through love” (Fides 2001, p171). Divine self-fulfilment implies that God has needs, or as Thomas Traherne, the seventeenth-century mystic, maintained, ‘he is full of want’ (Fiddes 2001, p169). Contrary to classical theology, Fiddes, following Traherne, holds that to be in need implies no deficiency in God, constituting no restriction on divine freedom. Rather, it traces a 'need-love', suggested by modern theologian Vincent Brummer, common to humans, of a desire to be loved and thus for this desire to be fulfilled (Fiddes 2001, p170). If infinite love is a part of God's character as creator, then, he argues, it must need a response of love from created beings freely given to their creator. Seen in this way, the expressions of love in *agape* and e*ros* are seen to show interaction rather than divergence, *agape* being totally self-spending whilst e*ros* is self-affirming and self-realising. “A God of love, then, will gain much both in delight and in the values produced by creation, through drawing created persons into the fellowship of divine life.” (Fiddes 2001, p175).

Two aspects of such love which are familiar in human experience, must, however, also accompany the love of God: one is the element of suffering, the other being the problem of freedom; together they constitute the *risks* of love.

In human terms, giving and receiving at all levels opens up the possibility of suffering, whether it be through sharing, or through rejection. Such analogy is reasonably applied to God in the light of the story of the Cross of Jesus and “the revelation . . . that God is identified with the suffering Christ” (Fiddes 2001, p173). For Fiddes this means that “in the transforming power of love, God uses even suffering to fulfil God's own being” (Fiddes 2001, p173) thus completing the divine glory. Freedom is however another matter: if God has need of a creative world, “how can either God or the world be truly free?” (Fiddes 2001, p178). One answer is that to give freedom to creation is in no sense divine self-emptying but rather something that a loving creator will do, since “it belongs to God's essential being” (Fiddes 2001, p180). This concept can be extended to show this apparent

loss of freedom by God and receipt of freedom by creation, as his willed decision (Fiddes 2001, p181). It is here that Fiddes gives *kenosis* its context: God *willingly* renounces self-sufficiency and supposedly the freedom from dependence of any kind, by "choosing to be a God with the needs of love" (Fiddes 2001, p182).

It must be said then, in regard to suffering with creation, and in providing it with freedom, "divine love takes a *real risk*" (Fiddes 2001, p189) and in the light of this reality the question arises for theology of whether God should therefore be considered an object of pity – as the eternal victim of the universe he has created (Fiddes 2001, p188). The answer Fiddes offers to this is provided by *kenosis*, understood here in terms of the possibilities that are actualised - that is to say that, in reality, there is an eternal reservoir of all possibilities in God which are continuously being added to by new ones. The freedom of the world is then seen to take on the role of a contributor in deciding which possibilities are actualised or even in making new and fresh possibilities (Fiddes 2001, p189). In this view "God will fulfil God's own purpose not *despite* the suffering of God but *through* it" (Fiddes 2001, p190). The suggestion then is that the risk for God is real - but it is not total.

Nevertheless, the fulfilment of his purpose depends upon the response of the world. In Fiddes' view this is most particularly evident in the creation of persons. Not that there is any standard model constructed by God for, as he puts it, "our decisions and experiences shape what we are" (Fiddes 2001, p190). But such is the will of God; it is his nature to have it so. It is here that the quotation that Paul Fiddes has chosen to precede his essay takes on an undoubted significance "The activity of God in creation must be vulnerable." (Fiddes 2001, p167).

Summary

The concept of the christlike nature of God was, as his biography shows, one of constant concern to Bishop Taylor throughout his Anglican ministry. So also was the relevance of the concept held for humanity, through the nature of the response looked for from the individual human person. There is no doubt either of his view of the need for a revision of many traditional concepts of the divine nature, but doing so by way of drawing the new radical concepts out of the established foundations. A reorientation of the traditional

interpretation of *kenosis* lay firmly at the heart of the theology of the revealed nature of God in the Incarnation – the essential clue to the creation of the cosmos and the explanation of the evolution of humankind. For, as Wood interprets Taylor's view of the Incarnation in respect of the Creation, it is "in the humility of Jesus, his pureness of heart, his forgiveness, his courage and sacrifice ... even in the throes of death", that he reveals the eternal divine love as that which, through the stages of time, has brought about "new life within the fabric of the universe" (Wood 2001, p202). In expanding on this *kenotic* love of God, by closing the gap between the infinity of the creator and the finite Creation, the three contributors have taken up this prospect in ways of their own, but in harmony with Taylor's search for reality in human terms.

Throughout these discussions, emphasis has been on the replacement of the remote, all knowing, all powerful God, blissfully existing apart from his Creation, with a God like Jesus the Christ in nature, dynamic and changing in response to Creation's need, participating in its evolution, permitting novelty and with it, individual freedom. It should be noted however that the kenotic view of the nature of God in creation, expressed here, implying a voluntary self-limitation of divine omnipotence, omniscience and freedom, has a variety of interpretations. Process theology, claiming that the limitation of divine power is inherent in the divine nature, bases God's kenosis not on his self-restraint, but on his bestowing empowerment on other beings, so that a cooperation with the finite world is achieved (Barbour in Polkinghorne (ed.) 2001 , pp1-20). Seeing kenosis more traditionally in relation to the Incarnation, leads others to understand the possibility of divine properties being either relinquished for a time [ontological kenosis] or retained but not exercised [functional kenosis]. Kryptic kenosis, however, restricts the limitation of divine attributes to the human nature of Christ (Crisp 2007, pp120-158). With this theme of the kenotic love of God the Creator, the essays may be seen to reflect the 'empowerment' of process theology together with the limitations set by kryptic kenosis to self-limitation, as essential features of the nature of God. But in addition, this self-limiting *kenotic* love, demonstrates, for each contributor, the revelation of the divine need for a response from creation – echoing Moltmann in a wish for union with humankind to whom the revelation has been given. Though expressive of God's own infinite desire in human terms, God is shown to be vulnerable and at risk of not being responded to – of suffering the pain of rejection. David Brown defines 'modern kenosis' as "in essence the claim that the divine nature is now seen to be committed in the Incarnation not merely to a symbolic drawing alongside humanity

but also to an actual ontological entering into the human condition" (Brown 2011, p1). Referring to William Vanstone's work as "bringing creation and incarnation into closer alignment", he makes a further point regarding the value of the essays. By including Anglican scientists, both priests and lay, as contributors to the wider view of the concept, he sees the taking up of Vanstone's themes with their reflections on the pattern of creation in the sciences, as part of "the overall project of self-limitation" (Brown 2011, pp193-194).

As to the role for human beings - this becomes a responsibility which, as Taylor puts it, consists precisely in our ability to respond (Wood 2001, p204). This response, being freely chosen must therefore be an individual undertaking, personally decided upon. The theology of the Christlike God thus seems clear regarding humans as individuals, sharing much with others but each having the status of an independent person.

However, whilst variety makes for individuality, it cannot necessarily be taken to imply uniqueness. For Taylor there is no doubt that Jesus is unique – he is the "archetype of creaturely response to God" (Wood 2001, p205). Whilst this suggests a commonality amongst those who "put their faith in him" so gaining the right to be "children of God" (Wood 2001, p205), this is as far, it seems, as this theological concept goes regarding the human 'self' and its uniqueness. For Ward, Peacocke and Fiddes the individuality is clearly relevant to the response of human beings to God's kenotic love. By being expressed in relation to the freedom of their self-consciousness it is particular to human persons, but any extension into a concept of a unique self is nowhere suggested or even implied.

With these observations in mind, the search for comparability in a twenty-first century biological view of the human being, will need to propose a scientific view not only of human individuality but also of the uniqueness of the human person.

CHAPTER VII: THE HUMAN GENOME

In order to present a scientific proposal comparable with the theological concept, as put forward in the previous chapter, of the humanness of God as 'Christlike', a representation of humanness in twenty-first century genomics - *Genomes And What To Make Of Them* by Barry Barnes and John Dupré (2008) - is reviewed. By comparing the outcome of each study, a clarification of the concept of the uniqueness of the human individual, as a means of integrating theology and science, will be sought.

Molecular biology's contribution to a twenty-first century scientific concept of the human individual

Introduction

Whilst their scientific backgrounds have taken the authors, Barry Barnes and John Dupré, into the wider fields of sociology and philosophy, in their academic work and research into genomes, they could not, it seems, resist introducing their book with a real life picture of a Cambridgeshire laboratory at the Genome Campus at Hinxton where biological research has been instrumental in the great scientific breakthrough of the first decade of the twenty-first century – the Human Genome Project completed in 2003. It was at a small number of locations similar to this around the world, that the steady work of sequencing the human genome was carried out (Barnes and Dupré 2008, p2). Nevertheless, whilst a visitor to such a laboratory would be aware of technological control of all aspects of such work, seeing robots probing nutrient gel in Petri dishes containing bacteria infected by viruses with fragments of human DNA (Barnes and Dupré 2008, p1), would serve as a reminder of the simplicity of the origins of such an enterprise a hundred years ago.

The Human Genome

Through this introductory vision of biological progress as it is nowadays, the authors clearly wish to give genomes their setting in relation to the past, and at the same time, cast a glance forward to what meaning genomics may have for the future. They are also emphatic that all that is going on in this field has to be regarded as part of the larger transformation in biological science which has come about through every one of its branches being 'molecularised': as they see it "This process ... is now bringing us into an era in which proteins and other macromolecules are being investigated at the same level of

detail as the DNA molecules that constitute genomes." (Barnes and Dupré 2008, p3). Given a place in such a setting, however, causes difficulties for them. Their aim is to convey an accurate picture of what current research is establishing to those viewing it from the outside. Where advances are rapid, findings at any one time may well become open to being discounted by later work and simplifying the knowledge gained may distort subtleties and complexities. As in former times, myths and ideologies may confuse the meaning of new theories later on. Therefore the aim, for Barnes and Dupré is to get the balance right (Barnes and Dupré 2008, p5).

To this end, the origins of twenty-first century genomics are traced back through Mendelian observation and deduction concerning the inheritance of physical traits through the advancement of microscopy in revealing the role of DNA in their transmission and thence to the mapping of genetic material through to the advancement of molecular knowledge. En route the significance of the progress will be shown to be reflected in the changing biological concepts leading up to the establishment of a new set of values, most particularly in relation to humanity and the individual human being.

On looking back on Mendelian principles derived from the observation of specific visible features of reproducing organisms and their offspring, it was *differences* in appearance that were being used to produce theories on the causes of variation within the laws of inheritance, as observed both in plants and in animals (Barnes and Dupré 2008, p3). Traits were accounted for by invisible genetic differences, which appeared to be inherited though the means of transmission was still a mystery. Interpreted as 'factors' for traits, Mendel had, in so far as his flowering plants were concerned, established their paired nature, only one of each pair being passed on to the next generation (Barnes and Dupré 2008, p23). It was only with the rise of microscopic techniques by Morgan and his American team in the 1940s, on the cells of the insect Drosophila that these factors could be related to actual structures within all cells, namely the chromosomes observed inside the nucleus (Barnes and Dupré 2008, p27). After years of tedious and laborious work, knowledge of chromosome activity during cell division was being recognised, not only as providing markers of visible phenotypical traits but also as structures which "could help to predict future recurrences of traits" (Barnes and Dupré 2008, p29). Out of such progress emerged the first location of particular genes on particular chromosomes leading to detailed genetic maps for Drosophila sp. - "maps of entire genomes, as we might say today" (Barnes and

Dupré 2008, p29). Thus genes were being accepted as material objects localised on chromosomes – beads-on-a-string perhaps or links-of-a-chain. Once this genetic material had been identified as DNA, the quest for knowing how genes actually functioned in the role of bringing about differences and variability in reproduction could start. By the middle of the twentieth century, genes were becoming identified in terms of not only what they *did* but what they *were*: what they did – their function – being what they gave rise to, that is, the phenotype; what they were – their composition – being nuclear molecules. "Genes were now material objects defined and identified in terms of function: they were, in fact, to be the carriers or transmitters of microscopic traits." (Barnes and Dupré 2008, p32).

Thus, step by step, the ideologies of the early 1900s were beginning to show signs of reality. By the second half of the century, however, advancement was by great strides. The field of genetics was extending, through the application of practices and techniques made possible not only by incorporating data from X-ray crystallography and advanced chemistry with advancing knowledge in biology through electron microscopy. The DNA molecule was being discovered through its complimentary base-pairing, together with its double-helical structure. In fact "Efforts and resources shifted more and more to the micro level: from the organism to the cell and from the cell to its constituents."(Barnes and Dupré 2008, p39). So it can be seen that many of the now familiar terms for the complex structures of DNA and the behaviour of RNA molecules had their origins in this period as did the processes of replication through the nature of the double-helix. The identification of the four organic bases, represented by their now familiar initials A,C,G and T, found to exist in varying forms throughout the length of the DNA in the chromosomes of every cell's nucleus, indicated the sequencing which was to become so significant to the genomics of the future. At the same time, the linking and separation of the two strands of the molecule was indicating the manner in which cell replication was possible. However, whilst the formation of new cells similar to the ones from which they arose, was becoming clearer, the variation in cell composition leading to differentiation of tissues and thus organs and thence of phenotypes, had still to be fathomed. It was with the deeper knowledge of protein molecules, through molecular biology, that the distinctive forms of organisms constructed from different kinds of protein, could be related to the complex structures and processes of DNA. What was being shown was "the amazing phenomenon of a natural ordering that read in one way specifies its own replication and read in another specifies the ordering of another kind of molecule altogether" (Barnes and Dupré 2008, p34). It had

long been known that proteins, the key to all cellular biology, are made from a small number of amino acids through the recognition of a 'code' for each, associated with the 'coding' of DNA. It was found that in a highly complex manner, DNA 'texts' were 'transcribed' in cell replication onto smaller strands of RNA from which sequences of amino acids were 'translated' into specific proteins. Thus, looking towards the future, Barnes and Dupré could say "to sequence an appropriate bit of DNA, would identify the specification for a particular protein" and by sequencing all the DNA in all the chromosomes of an organism, "we would have the sequence of the genome of the whole organism" (Barnes and Dupré 2008, p34). Furthermore, it was supposed that the human genome – the whole of the DNA in a human cell – would contain all the relevant sequences for producing a human being.

By the last decade of the twentieth century the immense task of so doing was, through the use of sequencing machines in particular and the advancing technology of computers and internet facilities, being diligently tackled (Barnes and Dupré 2008, p41). It was not just a 'great stride' forward for biology it was a transformation for genetics, from the classical concepts formulated through the century to molecular genetics which, in relation to the new genomics, was to herald a far deeper understanding of human beings than had been possible heretofore. Even though, historically, human genetics has emerged largely from the study of non-human species, analogy being employed to apply research findings to humans, the new technology, giving evidence of the nature of the human genome, was to be a "resource for individuating humans as well as celebrating their unity" (Barnes and Dupré 2008, p83).

It was with such a concept – an aim spurred on by high hopes – that those involved in the Human Genome Project were able to publish "a draft sequence of the human genome at the beginning of the millenium" (Barnes and Dupré 2008, p2). What a genome is, or rather how it may be defined remains open to debate. An informative definition states that it is "all the information being carried by the four-letter sequence of its DNA" (Barnes and Dupré 2008, p77) and thus a blueprint, map or programme. In material or genetically-derived terms, it is thought of as "all the DNA in a single set of chromosomes of an organism" (Barnes and Dupré 2008, p9). Each reflects much of what is known at the present time but with ever increasing knowledge each could be shown to have a limited meaning. The authors conclude that "as a basis for everyday understanding, genomes are

best thought of as material objects made of DNA" (Barnes and Dupré 2008, p9). As understood then through being derived from classical genetics, a genome may be defined as the entire genetic material of an organism, and thus as all the DNA in a single set of its chromosomes. Even this, however, does not satisfy those who are concerned with how the 'instructions' provided by the DNA coding are carried out in such a way as to result in an individual organism and one capable of passing on those instructions in the mechanism of inheritance. As the authors point out "the actual material objects we encounter in the cell nucleus are made of chromatin, not DNA" (Barnes and Dupré 2008, p78). Within chromatin, DNA exists with numerous other previously not appreciated substances such as RNAs and proteins, each becoming highly significant. For instance, small RNAs are implicated in gene suppression whilst histone proteins not only influence gene expression but provide a spool around which the DNA is coiled. Thus in the first decade of the twenty-first century, research associated with the HGP, surprisingly unpredicted molecular activity has been revealed, opening up the way to a fuller understanding of what genetic material does and is, as well as how what it *is* does what it *does.*

It was becoming clearer that DNA was not all that it, at first, had seemed to be – both in structure and function. Sequences were frequently repeated and many were non-coding areas between sequences, thought of as 'junk', were seen to have a function. Some pieces, *transposons*, were found to be "capable of moving around and copying themselves back into the main sequence at another location" (Barnes and Dupré 2008, p82). But much that was being understood comes now under a new title – that of *Epigenetics* - "the study of the alteration of characteristics without altering the nucleotide sequence of the DNA" (Elliott and Elliott 2009, p406).

As more and more has become known about DNA, two aspects of significance to its function of protein making have emerged. One is that its molecular composition, within the nucleus of a cell, shows vast and unexpected variation; the second is that it does not exist separately but is in chemical combination with the other components of chromatin within the chromosome (Barnes and Dupré 2008, p84). It has become clear that the essentials of epigenetics are revealed in both, each having a role beyond that of nucleotide sequencing, a role in fact related to the 'switching on and off' of the genetic function of those sequences – the epigenetic control of the DNA. Current knowledge lays a responsibility for the expression and suppression of genes, at the doors of three 'agents',

certain RNAs, chromatin's histoprotein and a particular subunit attached to one of the nucleotide bases of DNA (Barnes and Dupré 2008, pp78,85). The RNAs include small 'interfering' ones which are implicated in gene interaction and suppression at certain sites whilst the histone proteins have a complicated role in regulating gene expression. But the subunit, a chemical group termed methyl, added to one of the bases, cytosine (C), works in a very different and highly significant way – the very nature and thus the function of the DNA molecule being changed in a radical fashion. Methylation, in which much of the current research in molecular genetics is centred, is considered by some to be the key to all epigenetic study. So much is this so in the field of medicine that the current interest is in "the extent to which human DNA is methylated" and the call now is for a mapping not only of the genome but of the epigenome (Barnes and Dupré 2008, p87). The reason is mainly because of what the consequences of methylation might be, since whilst the methylated form is passed on in regular cell division which gives rise to tissues of a particular type, demethylation and remethylation may be instrumental in establishing the germ line – in other words "methylation is not permanent" (Barnes and Dupré 2008, p89). Around this concept much debate has arisen in relation to the Lamarckian idea of heritability of acquired characteristics, hitherto considered false, since evidence is now suggesting that methylation patterns resulting from 'outside influences' on a parent, "can persist across generations" (Barnes and Dupré 2008, p90). Since the causation of such patterns can be related to the immediate environment of an individual, from the human standpoint, the construction of the 'niche' through cultures (Barnes and Dupré 2008, p125) may indeed be a significant factor in determining what can and what cannot be inherited by humans.

Whereas in classical genetics invisible factors giving phenotypical differences between individuals were transmitted from one generation to the next, "with the advent of genomics ... these factors had in effect been made visible" (Barnes and Dupré 2008, p97). Through the assembly of the genome sequence an awareness of the vast number of variations in sequences led to an assessment of both differences and similarities. These, when applied to technology, could then both establish ancestry and the identity of individuals (Barnes and Dupré 2008, p98). Beyond this, genomic variations together with epigenomic interactions, have their significance not only in the physical nature of the phenotype but, it is supposed, in human psychological and behavioural traits. Herein lies the suggestion of a deterministic concept of human beings and their 'human nature'. But the authors draw the reader's attention to an equally significant awareness engendered by

science and by genetics and epigenetics in particular – that of unpredictability: “very many different causes and kinds of cause have to be taken into account ... and ... any specific causal story must be incomplete and any attempt at prediction enveloped in uncertainty” (Barnes and Dupré 2008, p143).

It is perhaps this *nature* of the individual human being that is of principal concern in relation to the human genome. Traditionally the nature of human nature lay in “the distinctive, morally vital features of human beings as participants in social life” (Barnes and Dupré 2008, p248), through the powers of reason, on the one hand and descent on the other – prerequisites for the “relation that exists between human beings” (Barnes and Dupré 2008, p250). The reader is reminded that such social interactions are characteristics of developed human beings: they are not characteristics of genomes and are no more potentials of them than they are of the molecules of which they are constructed. In aspects of human importance such as this, Barnes and Dupré say “we need to look to ourselves ... not our genomes” (Barnes and Dupré 2008, p256).

The three scientists, whose books were chosen for the particular relevance of their studies to the biological concept of human individuality, focus on a variety of aspects each of which throws light also on the limits imposed by their science to the understanding of the nature of individual human beings and their uniqueness.

Gabriel Dover’s *‘Dear Mr Darwin’*

The novel idea, which the title of Dover's book suggests is, that through a series of imaginary letters to Charles Darwin he can relate the research in genetics and genomes in which he had been engaged in the latter part of the twentieth century to Darwinian concepts conceived in the late nineteenth century. Whilst the significance of molecular genetics to the evolution of genes and genomes forms the subject matter of several of these letters, his fifteenth correspondence is given up to “the genetic basis of individual development” (Dover 2000, p232), or as he demonstrates the contribution of genes to the development and behaviour of humans. Since genes have a role in both the development and the ancestry of an individual human, he heads this letter “The Evolution of Individuality”.

He gives as his purpose for this letter the clarifying of his position regarding the “issues of genetic determinism and the supposed dilemma of free will in humans” (Dover 2000, p232). On the basis that there is no one-two-one relationship between particular genes and particular bits of an individual, he argues that “there is an ... unpredictability about DNA ... that undermines any notion of genetic determinism” (Dover 2000, p233). The majority of genes participate in a variety of functions and particular functions are the result of various genes. Moreover, the web of interaction between genetic elements is immense and intricate. It is not that current genetics cannot describe every feature and how the intricacies of gene interaction with each other and with the environment explain activity and behaviour, but that this can only be done *after* the individual has emerged – “We cannot determine in advance the future development of a newly fertilised egg” (Dover 2000, p233). “Even if armed with an individual's total genome of sequences” (Dover 2000, p236), the prediction of an individual's uniqueness, as observed in hindsight, could not have been predicted. Of course, average predictions can be made by assessing phenotypical similarities and the search for 'universals' exploits this and has a value in identifying commonalities in culture for instance, but in Dover's view, there is no such thing as an 'average person '. As he has illustrated in earlier letters, the key to genetic knowledge is the fathoming of its variation – not so much within genes themselves but in the various ways in which they control one another: “turning other genes on and off by producing regulatory proteins that bind to the respective sites ... in the promoters of ... other genes” and though sometimes these are termed 'master' and 'slave' genes, neither master nor slave is “uniquely restricted to performing one function” (Dover 2000, p155). In fact, no particular gene, or complex of genes, exists solely for a given function. Relating this to human uniqueness he can state with conviction - “The unfolding interactions between genes and genes ... are unique and unpredictable for each and every individual.” (Dover 2000, p238).

It is in this context that Dover refers to the situation familiar to many of genetically identical twins where all the genes are shared and develop in a common environment. Yet, as he says, “the twins acquire recognisably separate personalities in all the things that matter to an individual” (Dover 2000, p241). Relating this to the ability of multifunctional genes to interact in slightly different ways, he points to two other likely contributors about which “we know very little” - the random flux observed in development and the environmental influences on the unfolding of genetic interactions in individuals (Dover

2000, p241). Though still to be understood, he finds it holds the basis of human free will. "It is our biology that makes us genetically influenced and environmentally influenced unique individuals." (Dover 2000, p241). Then, with characteristic flourish, he ends his letter to Darwin with the biological conjecture that "We are on average, human, but we are, all of us, our singular selves." (Dover 2000, p243). Whilst clearly convinced of a scientific evidence for human individuality, Dover's sureness of individual uniqueness is shrouded by his observation that there is much that is not, as yet, understood, both in his own field of study and perhaps beyond it, into that of the study of the human self.

Paul R. Ehrlich's *'Human Natures'*

It is the nature of individual human beings, viewed as of such significance by the authors of *Genome* which is of supreme importance to Paul Ehrlich, the author of *Human Natures.* Ehrlich, an entomologist turned geneticist, engaged in the pioneering work on the genetics of particular traits in *Drosophila melanogaster* (Ehrlich 2000, p17), puts forward ideas about the nature of human nature arrived at through a growing understanding of the *Drosophila* genome (Ehrlich 2000, pp17-18). Though publishing his book a few years before the completion of the HGP, when some of the complexities revealed by the project had yet to be appreciated, the findings in his field were those on which the human genome were to be founded and may be judged as valid, regarding human attributes, for this reason. However, in the early pages of *Human Natures* he provides a clear statement of his interpretations and, in so doing, clarifies the meaning of its title. The prevailing notion of human behaviour represented by 'human nature' he says, is that "it is a single, fixed, inherited attribute": for him it is the singular usage that "leads us astray" (Ehrlich 2000, p12). Human nature is not the same from person to person, nor is it a permanent attribute. "Human natures are the behaviours, beliefs and attitudes of *Homo sapiens*" and thus, he argues, "There is no single human nature, any more than there is a single human genome." (Ehrlich 2000, pp12-13).

The key to his argument is, in the first place, a knowledge of genes and their role in determining the traits of human individuals. The gene-bearing DNA, the double helix structure of the molecules and the determining, through encoded information, of sequenced amino acids in the formation of proteins, together form his starting point (Ehrlich 2000, p19). From the genotype thus established, the phenotype whose traits of

every kind including behaviour, can be deduced. But every trait cannot be adequately accounted for – phenotypic differences do not always reflect differences in DNA and variations appear to be beyond the genetic laws of heredity and so diversity is well outside what can be accounted for by the human genome (Ehrlich 2000, p4). Molecular genetics, however, may suggest reasons for any mismatch of phenotype with genotype, genes frequently influencing more than one trait and those close together on a chromosome are frequently transmitted together (Ehrlich 2000, p19). Variations in traits may, on the other hand, be due to changes in the DNA itself [prior to gamete formation] – such change constituting a mutation: "Genetic variation has its basic source in mutation and normally, there is plenty of such variation." (Ehrlich 2000, p21). Furthermore, diversity may be accounted for by environmental factors, particularly during development: "The environment is fully as important as the DNA sequence ... exactly the same genotype can lead to quite different phenotypes in different environments." (Ehrlich 2000, p22). In fact, it is the interaction of these causal agents that has to be taken into account - "how different parts of the hereditary endowment interact in making their contribution to the development of the individual" (Ehrlich 2000, p11) is of extreme importance.

Having made out a good case, biologically, for 'individuality' Ehrlich's arguments for a 'nature' for each individual has a plausible foundation. But in the case of human beings the establishment of individual human natures is more complex. Early on in his book, Ehrlich examines the question of why human natures are often so different and yet so frequently the same and to begin to give an answer, he says, a background is needed which "lies within the domains of human biological and cultural evolution, in the gradual alterations in genetic and cultural information possessed by humanity" (Ehrlich 2000, p3). In his view, for the human species alone, changes in culture have been as important in the formation of 'our natures' as changes in hereditary information. Sure as he is of the importance of both, their relative contributions to a human's behaviour cannot be judged with precision. The role of genes is not to 'shout commands' about behaviour but rather to 'whisper suggestions' – those whispers are "shaped by our internal environments [those within and between our cells] during early development and later, and usually also by the external environments in which we mature and find ourselves as adults" (Ehrlich 2000, p7). Biologically it seems clear that the environment influences the expression of genes. As a consequence the actions of individuals are influenced, which in turn can cause changes in the environments of those individuals. Thus "people can create environments that will

change the proportions of genes ... and therefore change the biological evolution of human populations" (Ehrlich 2000, p23).

This perspective of evolutionary change having resulted for humans, from the interaction of biological and non-biological influences, leads Ehrlich to review the role of the unique type of awareness possessed by human beings, which he terms "intense consciousness which is central to human natures" (Ehrlich 2000, p110) and to question "how consciousness, awareness of one's own existence, evolved" (Ehrlich 2000, p112). Whilst not wishing to detract from the brain and mind as the primary generators of human natures, he points out that tissues arising during human development, from which the neural network of the brain is derived, are influenced not only by genes but by the environment of that development. The pattern of the brain's major groups of neurones is genetically established before they become functional: once impulses are generated, environmental inputs 'fine tune' them throughout life. Since each of us receives different inputs "a brain with unique and ever changing 'wiring' develops which is "a physical manifestation of our distinct and evolving natures" (Ehrlich 2000, pp125-6). Making clear that environmental influences include both intercellular influences and those from the world outside, Ehrlich relates the evolution of human intense consciousness to the changing social environment of 'our ancestors'. "My favourite conjecture", he says "is that human natures have been strongly shaped by multilevel human societies – families, bands, tribes ... and population pressures, all interacting in a positive feedback" (Ehrlich 2000, 113).

This interaction of genetic and environmental factors as joint causal agents is of crucial significance for Ehrlich, in answering questions of determinism in relation to human behaviour. Judging by the 'trees of interaction' generated by nerve impulses within the brain in every second of life, "only in a probabilistic sense" could it be said that "every move we make could be predetermined" (Ehrlich 2000, p125). Thus humanity's famed 'free will' must be considered in practice as a feature evolved through the hominid line, providing individuals with the ability to make real choices.

But an aspect that he considers has a less abstract and more material concept of humanity's unique type of consciousness, is the relevance to the cultural advances of the ancestors of present day humans, some 50,000 years ago (Ehrlich 2000, p159). Though

views persist amongst archaeologists about the real cause of the Great Leap Forward, in his opinion it was a “cultural change in response to an environmental trigger and sudden serendipitous, genetically based brain reorganisation” (Ehrlich 2000, p159). The environmental trigger could have been improved by hunting and gathering techniques with the accompanying stress of competition, or increasing population density resulting from climatic fluctuations: “Necessity could have been the mother of invention”. (Ehrlich 2000, p161). Doubting that a cultural leap of this calibre could have come about without genetically based change in the brain, scientists favour the view that there was “some basic neurological transformation that allowed ... the rapid development of spoken language ... [with] the resulting greatly improved communication” (Ehrlich 2000, p161). Such a transformation could be difficult to demonstrate - “empty fossil skulls say little ... about the inner structures of the brain” (Ehrlich 2000, p162). In Ehrlich's view, “The truth is that we don't yet know exactly what caused the Great Leap, and we may never know.” (Ehrlich 2000, p162).

Nevertheless, without the ensuing agricultural revolution and the Neolithic sedentary life that went with it, cultural evolution, it is felt, “could never have produced our complex modern civilisation and the human natures that go with it” (Ehrlich 2000, p307). Humans, by the virtue of their intense consciousness have combined an awareness of self with an understanding of the ability to respond to other humans. For Ehrlich these are the hallmarks of humanity and the prerequisites for developing ethical standards (Ehrlich 2000, pp310-11) – the “subjective views of our conscious selves” and “the objective view that puts us in a real-world context” (Ehrlich 2000, p317). How then, he asks can we bring the former, the province of the humanities, into the scientific reductionist world view? His answer is that it is impossible. It may be that “we must accept that a satisfying reductionist explanation of our ... behaviours is beyond our grasp” (Ehrlich 2000, p318).

John Odling-Smee’s *‘Niche Construction’*

Considering that the title of their book refers to a relatively recent aspect of evolutionary and developmental biology, the authors in their introduction define niche construction as the 'second role' of organisms in the processes of development and evolution (Odling-Smee et al 2003, p1). Justifying this designation later on as an 'extended evolutionary theory' (Odling-Smee et al 2003, p380), they are making clear that, in their view, it is a shift – and a

significant one for twenty-first century biology – from the conventional or standard theory. The basis of most evolutionary theory they say gives organisms the role of 'carrying genes' and with their particular genome they survive and reproduce “according to chance and natural selection pressures in their environments” (Odling-Smee et al 2003, p1). But they contend that organisms also interact with environments and with their activity “modify at least some of the natural selection pressures present in their own, and in each other's, local environments” (Odling-Smee et al 2003, p1). This then is their 'second role' – that of niche construction, the process “whereby organisms through their metabolism, their activities, and their choices, modify their own and/or each other's niches” (Odling-Smee et al 2003, Glossary). In reality, they argue, rather than enforcing natural selection by their activity, organisms bring about changes in the environment which then co-evolve with them (Odling-Smee et al 2003, p2).

But natural selection permitting organisms as phenotypes have received and will pass on their traits through genetic inheritance: niche construction is set alongside this concept as inheritance through ecology (Odling-Smee et al 2003, p13). Whilst genetic inheritance depends upon the passing of replica genes from parent to offspring, niche construction is achieved by the persistence of changes caused by ancestral generations – resembling, they say, the inheritance by humans of territory or property, rather than information through the agency of encoded DNA! (Odling-Smee et al 2003, p15).

The authors then turn to the implications that this extension to the conventional theory has for the accepted concepts of evolutionary biology. Adaptation as a response by organisms to the selective pressures of their own environmental niche is the first, they feel, that needs revising. “Organisms do not adapt to their environments: they construct them out of the bits and pieces of the external world.” (Odling-Smee et al 2003, p17). They point out, moreover, that biologists have to reconsider the route to the matching of organisms to their environment: “either the organism changes to suit the environment, or the environment is changed to suit the organism” (Odling-Smee et al 2003, p18). This introduces a new term with evolutionary significance – it is 'feedback'. “If organisms evolve in response to selection pressures modified by themselves and their ancestors, there is feedback in the system.” (Odling-Smee et al 2003, p20). It follows, then, that whilst in terms of standard evolutionary theory any match between a human's characteristics and the environment experienced by ancestral hominids, was accounted for by a one-way

process of chance or natural selection, the concept of feedback suggests a two-way process. For humans this is of prime importance for by modifying environments through cultural processes, humans modify the selection processes of that environment through the process of feedback (Odling-Smee et al 2003, p240). Taking this a step further, they assert that whilst cultural advancement can be shown to have coevolved with genetic variation, niche construction's influence on the prevailing environment has itself created the further unit of inheritance termed by them '*ecological inheritance'* (Odling-Smee et al 2003, p241). This leads to the proposal of a triple-inheritance version of gene-culture: co-evolution as an extended evolutionary scheme coming about from the authors' conviction that "Culturally modified human selection pressures are now regarded ... as ... part of a more general legacy of modified selection pressures that are bequeathed by niche-constructing human ancestors to their descendants." (Odling-Smee et al 2003, p251). In practical terms whilst, in a population, genes are inherited by individual organisms from their ancestors, they reflect the selection imposed by their ancestors' environments which have been influenced by culture through the medium of niche construction (Odling-Smee et al 2003, pp254-5). On this basis, the recognition of the role of the individual in a transmission of information both genetic and cultural is the key to changes in groups or organisations amounting to adaptation. Genetic changes are biological and in evolutionary terms slow, but cultural processes reflected in behaviour through such acquisitions as learning and language, are of a different calibre and regarded as "shortcuts to acquired adaptive information" (Odling-Smee et al 2003, pp158-9).

Studies in niche construction are however essentially population based and the authors put forward two routes by which "a human population could respond to its own cultural niche construction" (Odling-Smee et al 2003, p378). Route 1 is a response leading to adaptive cultural change, whilst route 2 is when cultural processes fail to express an effective response (Odling-Smee et al 2003, p339). They suggest that since each would have different consequences, signatures should be identifiable. Cultural signals would be in the form of cultural changes, genetic signatures being allelic frequency changes in populations. This takes the relevance of niche construction into the field of hominid evolution and thus that of the associated disciplines of archaeology and anthropology (Odling-Smee et al 2003, p351) and so beyond the scope of the biology of genetic form and behaviour.

Summary

That the authors of *Genomes* have, underlying their aims and purpose, a 'quest for true understanding', is suggested by the addition of *What to Make of Them* to their title. In their introduction Barnes and Dupré give as the first of their main purposes the conveying not only of a new understanding of genomics and molecular genetics, but, in so doing, the way in which the new techniques, growing out of traditional genetics, necessitate changes in both ideas and theories (Barnes and Dupré 2008, pp4-5): such changes emerging from established laws, focus, for them, most particularly on “their potential applicability to humans” (Barnes and Dupré 2008, p7).

The changes arising are seen by them less as revisions and more as shifts (Barnes and Dupré 2008, p6) – movements towards broader and more inclusive concepts. Their discussions show that twenty-first century molecular science will necessitate shifts in three directions, each being directly related to human individuals. The concept of genetic determinism has first to be modified in the light of the control mechanisms now established in the field of epigenetics. The need for a broader view of the agents of selection follows, changing environmental pressures having now to include both internal and external factors, each being in a constant state of flux. Together these promote a radical change in the interpretation of the biology of *Homo sapiens*, through both form and individual behaviour – that is, of the nature of human beings.
Each of these shifts of understanding and response is taken up by Ehrlich and blended together in his turning of the commonality of human nature into the individuality of each human's personal nature. For Dover it is the complexity of molecular genetics with which his work was involved together with the influence of environmental factors on organisms' development that gives him his very clear view of human individuality. It is a revised concept of the environment as the controlling agent of selection that Odling-Smee and his colleagues present in association with current understanding of the biology of inheritance and the development of individual humans.

However, throughout the contributions to this twenty-first century scientific view of human beings a conclusion emerges concerning the limits of biology in making pronouncements regarding the uniqueness of individual human beings. For Barnes and Dupré, regarding the

nature of humans as unpredictable within a socially interactive way of life (Barnes and Dupré 2008, p250), each individual has a uniqueness which in their view lies outside biological appraisal: for this, they conclude, “we need to look to ourselves” (Barnes and Dupré 2008, p256) – which suggests looking to a discipline in which this can be confronted and commented on. It is because of the different ways in which human multifunctional genes interact, about which “we know very little” that Dover (2000, p241) can only define unique individual humans, unbiologically, as “singular selves” (Dover 2000, p243). Though finding clues to the uniqueness of human beings' 'intense consciousness' in their hominid ancestors, Ehrlich finds himself in the realms of other disciplines, the prehistory of humankind in particular. The reorientation of such ideas with biology is as he says, “beyond our grasp” (Ehrlich 2000, p318) – the grasp of the biologist. Odling-Smee and his colleagues extend the biological implications of niche construction into the behavioural concept of cultural signatures as observed in human populations (Odling-Smee 2003 pp388-9). In so doing they advance the search into the realms of archaeology and thus suggest that there is a need, in this regard, for the study of individuals as unique to continue through an associated discipline.

As a study of a twenty-first century scientific concept comparable with that of the theology of the Christlike God, the issues, common to both, show significant similarities regarding human individuality and the question of whether uniqueness is established, warrant the discussion in depth of the following chapter.

CHAPTER VIII: A DISCUSSION OF THE CONCEPTS OF HUMAN INDIVIDUALITY

The two studies put forward as representative of twenty-first century ideas on the human being as an individual, have been shown to give grounds for the recognition of the concept as an area of agreement between Christian theology and biological science. Nevertheless, questions raised regarding the uniqueness of the human individual remain, so far, unanswered.

The relevance of the notions of the human being as an individual to the relationship of science to theology

Whilst the criteria for the choice of aspects of twenty-first century science and theology relating to human uniqueness were provided by John Polkinghorne's views on the interaction of the two disciplines through a discussion of intellectual insights (Polkinghorne 1998, p31), to see how nearly they correspond with those of other scholars, a 1999 publication of particular value is *God, Humanity and the Cosmos* – a book contributed to by eight authors, "all experienced teachers and researchers" (Southgate et al 1999, pXXVII).

In the forward to this book, van Huyssten outlined the dichotomy between science and theology resulting from the 'modernist heritage', as yet another challenge to theology through fragmentation of traditional guidelines. In his view it is necessary to "probe the interdisciplinary possibilities and shared resources of the ongoing conversation between theology and the sciences" (Southgate et al 1999, pXXII). This he feels is precisely what the team of co-authors have accomplished – creating an awareness of "just what kind of theology is being done in the light of contemporary science" (Southgate et al 1999, pXXIV).

With the aim of clarifying the nature of the current science and theology debate stimulated by the endeavours of the Templeton Foundation to encourage dialogue between the two disciplines, a discussion is first of all presented concerning the schemes for analysing the concepts put forward by Barbour (Southgate et al 1999, p7) and Polkinghorne (Southgate et al 1999, p22). Barbour's *theology of nature* is seen as traditional doctrine being reformulated in the light of current science, whilst Polkinghorne's concept of *consonance* sounds 'warning-bells' where the real entities, though seeming to run parallel and thus in harmony, have discordant outcomes, one side having to back-down in order to come into

line with the other (Southgate et al 1999, pp24,25).

Recognising the need for conversation between the disciplines, particularly in relation to humans, a review of the evolution of hominids is provided (Southgate et al 1999, pp163-7) along with an assessment of the relation between the religious and the scientific view. Associating the evolutionary development with origin, capacity, consciousness and self-awareness, (Southgate et al 1999, pp167-71), rather as Polkinghorne does, the authors' conclusion recognises the roles of "genetics, molecular biology, palaeontology and complexity" (Southgate et al 1999, p171) as scientific explanations but they are cautious of allowing its implications to provide theistic reasons for the "way for a creator to work".

The concept of 'evolutionary evil' raises the question of God's role as designer of creation, permitting the suffering of deprivation, predation and possibly, extinction. For some, the results of the divine gift of *freedom* though inflicting suffering on the Creator as much as on Creation, is too great a price for ultimate harmony. Against such protests Peacocke's view of the ultimate value of the 'Kingdom of free-willing' is offered together with Ruth Page's proposal [after Heidegger] of God's being "a God of letting possibilities be" as a solution (Southgate et al 1999, pp274-276). This theme is picked up again in an examination of the relationship between the divine, human and the non-human world, where the concept of *kenotic* creation is considered through the writings of Jürgen Moltmann, Paul Fiddes and Keith Ward (Southgate et al 1999, pp220-225) whose theological insights "are very helpful in the search for the model of God, humanity and the cosmos" (Southgate et al 1999, p225). However, it is considered that Moltmann limits *kenosis* to the incarnation and the Cross and that Fiddes and Ward are sometimes "distinctly abstruse" (Southgate et al 1999, pp221,225), the focus being essentially on God rather than being developed along the lines of the whole of 'God, humanity and the cosmos' concept: that is to say, in the direction of theological anthropology. Transferring the focus onto "the humankind with which God desires special fellowship" (Southgate et al 1999, p225) draws attention to the implications for human nature. Together with a consideration of the scientific knowledge of the human person as the outcome of the Human Genome Project, a challenge is presented to humans "to attend closely to the nature of human being" (Southgate et al 1999, pp394-5).

In the final chapter, 'A Look at the Future', the authors say that "We have shown that there is a conversation between different sciences and religion which need not be on the basis of conflict." (Southgate et al 1999, p391). Looking forward to how this might develop in the future, they take up Holmes Rolston III's predictions, with his conclusion that the dialogue

is likely to continue but only if there can be integration between the two. For humanity “an increasing understanding of consciousness, self-awareness and human agency” will have crucial effects for both human interaction and, ultimately of divine agency. Scientific knowledge, it is held, confers power; religious values ensure that just and appropriate use is made of that power. The momentum for increased dialogue *is* there and “the stakes, as the new millennium begins, could hardly be higher.” (Southgate et al 1999, pp396-7). Amongst the variety of topics which the wide context of the eight authors has opened up have been the two issues which stand out as central to the chosen twenty-first century trends in science and theology – the Human Genome and *kenosis* and it is around these two keynotes with their relevance to the themes explored in the thesis, that opinions at a deeper level are now sought.

With Bishop Taylor's interpretation of the essential revelation to mankind through Jesus as the Christlike nature of God, the attribute of *kenosis*, the association with the theology of Jesus being both human and divine is clear. For a twenty-first century view of this theological concept, Adrian Thatcher's book *Truly a Person, Truly God* has been found to be of value. In giving the book the subtitle “A Post-Mythical View of Jesus”, Thatcher states that “It will show that recent explorations of what a human person is, are able to advance Christian reflection on what a divine Person is.” (Thatcher 1990, p1).

In relating 'personhood' to 'nature' – human nature and divine nature – Thatcher shows how this brings to light a profound difference in the theological understanding of divine omnipotence held to by “contrasting conservative and liberal approaches” (Thatcher 1990, p94). Taking the firmly held traditional views of Thomas Morris (Thatcher 1990, p11, n6) and contrasting them with Dietrich Bonhoeffer's approach (Thatcher 1990, p11 n8), he points to the doctrine of kenosis as the source of their fundamental differences. For Morris, believing “the incarnate Christ had two minds corresponding to the two natures”, the notion of his laying aside any measure of his divine attributes has to be rejected. The implication of this concept is that Jesus possessed not 'mere' humanity but 'full' humanity, so that what was given up would seem to be the essential human freedom – that of choice. Bonhoeffer's position is that the weakness arising from laying aside all divine omniscience and omnipotence is “the surest sign of his Godhood” (Thatcher 1990, p96). The implication here is that the self-limitation of kenosis provided the freedom to reveal God “through death and resurrection” and the possibility of a response from those to whom this divine

love is made clear. For Thatcher, there is an impasse: either Jesus has dubious real humanity or he is a man uniquely inspired by God. There is though a middle way which he presents as 'anomalous monism', a theory “which indicates that we are ourselves baffling mysteries” and thus unfathomability and mystery may well be expected in the divine case of the Person of Christ (Thatcher 1990, p98). Theologically the distinction of the transcendence of the unique divine person has to be recognised, though revealed in the historical world, as outside time and space - “outside the grasp of science and philosophy” (Thatcher 1990, p103) more intensely so than for the rest of humanity. But in spite of the distinction, to Thatcher the value of the analogy for gaining a concept of the nature of Christ Jesus is that “it helps us to anchor a great mystery in a lesser mystery, yet one which is intimately known to us” (Thatcher 1990, p105).

Clearly much of the debate outlined here has, by associating kenosis with Christ and his humanity, distanced the interpretation from the concept of its representing the nature of God himself – the kenotic love being exhibited in creation. Nevertheless the essence of humanness recognised in the Person of Christ is relevant to the Christlikeness of God by relating human experiences to those of Jesus, a resonance is felt with the concept of God as vulnerable, risking rejection, yet 'in need' of human response. In developing the theme of taking together the personal qualities of Christ – those known through his historical life and those recognised as unknown even by his own closest disciples – as apprehended by the early Church and ascribed as Godhood, Thatcher suggests that his Godhood can be recognised through his humanhood by a different route - the humanness of God being recognised through the Godliness of Christ. In addition, by the rejection of Morris' view of Jesus as a God-man “with little or no connecting links with the rest of us”, an enhanced view of humanity emerges since “God in ... Jesus has afforded us a new interpretation of personalness ... of what it is ...to be human (Thatcher 1990, pp116-117). Furthermore human individuality is emphasised by the theme of “the single divine Person of Christ” (Thatcher 1990, p122), the knowledge of whom is personal, as is the response which, through God's provision of freedom of choice, allows individuals to accept or reject what his non-coercive love offers. It is here that the *kenotic* attribute of Christ and the *kenotic* nature of God come together - “in creating persons who possess freedom ... God provides also for the freedom of creatures not to respond”, thus involving for God “a monumental risk” but without which there would be “no possibility of loving response” (Thatcher 1990, p143).

Whilst it seems that the individuality of humans is thus essential to the theology underlying the concepts associated with *kenosis*, it is not so with the quality of the uniqueness of the individual which seems absent throughout. However, in relation to human nature Thatcher, in raising the matter of 'disorders' of an individual character alludes to John Macquarrie's belief expressed in “every existence is unique; it is someone's own” and “cannot be quite penetrated” (Thatcher 1990, p125) but as he says, this, though theological is philosophy and it seems that it is in that discipline that its understanding should be sought.

There is though, in Thatcher's post-mythical view, a valuable insight into uniqueness; when human aspects of Christian theology and biological science are laid out side by side, the uniqueness of Christ is seen as representative of a new pattern of personalness, whilst the uniqueness of the human species lies in a new configuration of biological material. The former “comes about by intervention of self-giving of God”, the latter by “an evolutionary jump or series of jumps” (Thatcher 1990, p116). The human species and thus each human individual has emerged by virtue of genetic change in the genome – a scientific concept for which some twenty-first century views will now be looked into and reflected upon.

Of utmost importance to the furthering of late twentieth century understanding of the molecular biology of genetics was undoubtedly the developing science of epigenetics. This concept was clearly apparent in a symposium, under the title of *Epigenetics,* taking place at the end of the 1990s where specialists in genetics met to share and discuss advances in our understanding of epigenetic phenomena (Chadwick (ed.) 1998, p1). As the introductory paper makes clear, advances during the decade had provided “the primary tools necessary to explore the controls of genes during differentiation and development” (Chadwick (ed.) 1998, p1) whereby it is apparent that “multiple mechanisms appear to have been recruited to operate in any given system” (Chadwick (ed.) 1998, p3). Much of the work, though associated with yeast and plants, is directly relevant to “the operation of comparable regulatory mechanisms in humans” (Chadwick (ed.) 1998, p4), but it has also opened up areas “about which we know nothing” (Chadwick (ed.) 1998, p4). Some ten years later a further symposium entitled *Tinkering*, [the opportunistic rearrangement and recombination of existing elements] had as its purpose to consider how the advancement of knowledge had by then clarified the implications of epigenetics. By this time a concept

of a *genetic hierarchy* accompanied closely by *epigenetic hierarchy* had been arrived at: each was seen as a network of activity interacting concurrently with the other, and characteristic of every developmental process (Bock (ed.) 2007, pp8-9). Of great significance here was the revision necessary in the understanding of the role of genes, the genetic networks could no longer be considered as autonomous: epigenetic interaction revealed most clearly the role of intercellular influence, neighbouring cells reciprocally regulating their specific functions (Bock (ed.) 2007, p9). Whilst relating current achievement to the pioneer work of the 1940s to the 1970s, the emphasis throughout was the prospect for the future – looking toward broader implications of non-human research for humans, particularly in relation to the current knowledge of the human genome. Although individuality was relevant to the discussions, the nature of human individuals was not within their terms of reference, but how members of the human race have come to be as they are certainly was. The challenge would be "to figure out what genes changed in human evolution and how they were deployed" and gave rise, through a series of transitions "into modern humans" (Bock (ed.) 2007, p16). The scope for establishing the uniqueness of each modern human, whilst reasonably a genetic/epigentic possibility, lies elsewhere and 'outside' this field of biology.

With humanity as principal concern in his twenty-first century book *Our Final Century*, Martin Rees takes a longer-term view of the implications of current molecular genetics. Quoting a leader of the Human Genome Project, John Sulston, the prospect for humanness should be viewed in the light of technological possibilities – questioning how much non-biological hardware could be 'hooked up' to a human body and yet still could be called human (Rees 2003, p18), or should biologists be considering Freeman Dyson's speculation that "within a few centuries, *Homo sapiens* may have diversified into numerous sub-species, adapting to a variety of habitats beyond Earth" (Rees 2003, p22). Even though it seems that over the centuries, one element has remained unchanged, namely human nature, some predict that twenty-first century advancements, including genetically induced modifications, "could change this essence of our humanity" (Rees 2003, pp68-9). But relating these concepts to the sciences Rees sees the need for a clearer understanding of "patterns, structures and interconnections" (Rees 2003, p153). For him, discovering the molecular nature of genetic inheritance through the "readout of human genomes" is an achievement, but it is "just the prelude to a far greater challenge of post-genomic science: much will depend upon an understanding of how the genetic code triggers the assembly of

proteins and expresses itself in a developing embryo" (Rees 2003, p153). Even then, it seems to him that we are faced with the realisation of there being limits to what human brains can understand and, touching on human self-consciousness, it may be that through science, "we can never understand everything about ourselves" (Rees 2003, p154).

Linking this prediction regarding the possibilities for humanity through genomics and genetics with the challenge presented by epigenetics regarding the way in which we came to be modern humans, are some of Richard Leakey's ideas emerging in his 'search of what makes us human' put forward in his *Origins Reconsidered*. In his attempt to establish what separates humans from their nearest relative the chimpanzee, he makes clear that it is not just the human brain, but what it particularly generates – the sense of self (Leakey, R. 1992, pp296-7). It is, he says, what makes consciousness a subjective experience and yet "paradoxically it is extremely difficult to prove that it exists at all" (Leakey, R. 1992, p298). Nevertheless whilst much that is said by archaeologists is only informed speculation, "the emergence of a key element of consciousness – the awareness of death – sometimes does make its mark in the prehistoric record" (Leakey, R. 1992, p303). Basing his inference on evidence of deliberate burial, Leakey questions whether or not modern humans have a sharper consciousness than those of some hundred thousand years ago. He gives his view that "it is likely that with the origin of modern *Homo sapiens*, subjective consciousness was keener than in archaic sapiens" (Leakey, R. 1992, p303). Acknowledging with conviction that the mind of the modern human must have limits to what it can comprehend – and the individual's consciousness may be "one of those things beyond those boundaries" (Leakey, R. 1992, p310), he draws his conclusions from his discussion. The first relates to that modern individual human being - "consciousness, as a quality of mind, makes each of us feel special as an individual, because the sense of self, by its nature is exclusive of others" (Leakey, R. 1992, p310). If this could be interpreted as a 'uniqueness' which is found to be outside the boundaries of biological science, then his second conclusion has an undoubted significance. Associating the fathoming of reality with consciousness, he maintains that future generations may have to cope with realities beyond our own universe. But "meanwhile" he says "here on earth palaeo-anthropology teaches us that our reality is rooted in our history (Leakey, R. 1992, p311). Prehistory and archaeology's interpretation of what it reveals, may then be the discipline through which our understanding of the uniqueness of the human individual will be found.

From the discussion of the relevance of the two concepts of the individuality of modern humans – the theological through that of the divine yet human Jesus Christ and the scientific through the genetic/epigentic understanding of the biology of each human being – the wider view from each discipline is instrumental in drawing conclusions appropriate to a twenty-first century perspective. These may be summarised as amounting to:-

1. Much of each concept centres on human individuality but in both interpretations there is uncertainty of the relevance of the outcome of the deliberation to anything beyond that individuality. That is to say, in neither concept can grounds be given with confidence, to the notion of the uniqueness of each human individual.

2. The lead, from each side is towards a need to draw on other disciplines where the issue of the nature of human beings – the human self – is central. On the theological side one approach is by way of philosophy, philosophical theology being the appropriate route. For science, much of the discussion has supported the value of prehistoric archaeology and since evidence of an awareness of 'self' – the mysterious 'self-consciousness' – is the key issue, an appropriate associated discipline is therefore cognitive archaeology.

The search, however, has to go further than this if the aim of finding an area where theology and science may jointly contribute to their integration, is to be achieved or rejected. To provide a foundation for this, the uniqueness of the human individual has first to be considered in depth through the medium of the associated disciplines – philosophical theology and cognitive archaeology.

CHAPTER IX: THE UNIQUENESS OF THE HUMAN INDIVIDUAL: A PHILOSOPHICAL APPROACH

The search for the relevance of human individuality to science and theology, through a study of *Genomes* and the *Christlike God*, though gaining support from a variety of sources, has been seen to fall short of the aim to establish a bond of union between them. Furthermore, the notion of uniqueness as a meeting point, has appeared to be outside both the scientific and the theological concept of the human individual. With the intention of continuing the search by way of associated disciplines, comparable studies of the concept of the human 'self', from firstly, a philosophical view point and secondly, an archaeological one, are presented.

A study of Macquarrie's concept, as expressed in his *In Search of Humanity*, discussed by philosophers and philosophical theologians

Introduction

With the guidance of John Polkinghorne's criteria for success, in the twenty-first century, for interaction of real value between science and theology, the presentation of the human genome by way of *Genomics* and of divine humanness through the C*hristlike God*, has brought to light two elements of particular importance to the proposed search for a place in that interaction for the uniqueness of the human individual. Firstly for the two widely differing disciplines, some common ground has to be established and this is found in the human person. That this is indeed so has been apparent in the preceding studies of *Genomics* and the *Christlike God* - the sharing of commonalities between the meeting of science and theology being clearly revealed in their concepts of the knowledge and understanding of the human individual. The second essential has emerged with equal clarity. From the discussion arising from the coming together of those studies, the need for more than basic agreement and sharing of views has been emphasised – the need for the search for interaction to be somewhere between Polkinghorne's 'opposite ends of the spectrum' of rational human enquiry – the fields of other disciplines. The search for both science and theology has to be completed through the agency of an associated discipline, where for each, the meaning of human uniqueness is shown to lie in the reality of the human individual.

For theology, it is philosophical theology that has been selected, where the human longing

for secure identity is seen to be brought into a relationship with the Christian experience of finding human identity in Christ (Schults 2003, p78). For science, it is the area of prehistoric archaeology, where knowledge of the progress of the 'ancient mind' through the ages, is brought to light – cognitive archaeology.

Philosophical theology's approach to the uniqueness of the human individual

Renowned for his anthropological approach to theology is philosopher/theologian John Macquarrie and it is his book, *In Search of Humanity,* that is chosen to form the basis of enquiry into human uniqueness as discerned through the philosophical study of the human individual. Expressing freedom and transcendence as instrumental in combining the poles of individuality and sociality in a human person, he shows the reality of each human being as a unique individual. It is this that has been of prime importance to the choice of Macquarrie's book, as it gives to the 'self' a significance as an individual being – an 'ego' – yet in an historical and social context of which that individual is a part. In the words of philosopher Eugene Thomas Long, as he discusses the book's value –

> "Macquarrie provides us with a dynamic temporal narrative of the self as a dialogical living being in the world realising itself in relation to others in freedom, sociality, cognition, language, commitment, love and so forth. Each individual is engaged in carving out his or her own identity, his or her unique life story." (Long in Morgan, R. (ed.) 2006, p161).

IN SEARCH OF HUMANITY

A Theological & Philosophical Approach by John Macquarrie

Whilst in the opening chapters of *In Search of Humanity*, John Macquarrie outlines the features which, for him, together constitute an individual human being, it is not until he extends his concept of humanity to the "inescapable social nature" of an individual person (Macquarrie 1982, p83) that he puts forward the need to recognise the "two poles" of each being (Macquarrie 1982, p83). Defining the two poles as the individual and the social, he shows that whilst ideally they are in harmony they are identified most clearly by the tension that is set up between them. Thus, "each human being has a self-identity that differentiates him from every other" but also an "essential sociality" (Macquarrie 1982, p85): it is this concept that forms the basis of his "study of our humanity" (1982, preface) and is to form the foundation of the proposed contribution, from philosophy, to theology's

view of the uniqueness of the human individual.
Of the uniqueness of each human person, Macquarrie has no doubts: “For all the billions of human beings that exist or have existed upon earth, each one is a unique being” and each one has “his unique givens and his unique situation and these constitute, as it were, the raw materials of the life story.” (Macquarrie 1982, p84). However, within this life story, sociality is an essential compliment to the uniqueness of the individual. Philosophers differ in assigning a prior origin to one of the two – for some, individuals came together at some period of history, to form a society, whilst others see individuals emerging from a social matrix. If, however, the tension suggested by the dynamic nature of humans has always existed, then, he argues, the two poles “seem equally original in the being of man” (Macquarrie 1982, p85). Nevertheless, in recognising the essence of the individual as the self or the ego, the inwardness and privacy, inaccessibility and inexpressibility of the self, the individual is seen as a starting point from which the interrelationship with the social aspects may be observed.

As he undertakes a philosophical review of the individual pole of his concept of the human person, before examining what characterises the self, Macquarrie gives to this “human centre” to each person's life (Macquarrie 1982, p84) a setting or context in the form of a clarification of “what it means to be a human being” (Macquarrie 1982, p1). He looks first at the meaning of 'human', the biological *Homo sapiens* as well as the 'truly human' person, and then at the two qualities which distinguish the one from the other – the freedom to be truly human and the transcendent quality of a truly human life.

Even though the term 'human' – biologically signifying certain givens possessed by each individual – is equally indicative of the 'condition of man' in both philosophy and theology, the term 'being' needs for Macquarrie, some adjustment. Whilst in empirical terms the 'human being' clearly has value as defining the common characteristics shared by individuals, who by their nature are truly 'human individuals', it fails to reflect the dynamic and autonomous characters of their existence. As a means of illuminating the “process, transition, incompleteness and movement” which underlie that character, he suggests 'becoming' as a substitute (Macquarrie 1982, p2). When this more fluid view is applied to human 'nature', the sense is expressed of “as yet unfinished humanity which is emerging and taking shape in the history of the race and in the existence of each individual” (Macquarrie 1982, p3). This emerging of human nature as a reality, he sees as the

“emergence of personal life from the merely animal life which preceded it” (Macquarrie 1982, p8) and thus each individual as a personal human being. It is the self, seen as this 'personal human being' that is the subject of Macquarrie's discussion of the many aspects of the individual, fundamental to which are freedom and transcendence.

If an individual's true humanness is progressive – going through transitions of incompleteness with direction towards fulfilment – then the freedom to follow this course is “essential to becoming a human person” (Macquarrie 1982, p10). It is only through exercising that freedom that it is identified and awareness of it is only momentary – at times of decision and creativity – when it is given “a definite shape and something new enters the world” (Macquarrie 1982, p13). The initial directedness of this creative-freedom is seen as the 'leading edge' of a person, the “conscious, rational, unifying and discriminating element that leads us in one direction rather than another” (Macquarrie 1982, p14). By virtue of it, a human individual has a role in the creation of the self - “the human being has a share in creating a human essence”. It follows then that humans take part in the shaping of the natural world and pushing back its frontiers to give rise to 'a humanized world' (Macquarrie 1982, p15). Since such freedom must include an individual's free will, the question arises [particularly from upholders of determinism] as to its extent – is it absolute or are there limitations? For Macquarrie, human freedom is always limited since it is “always conjoined with finitude” (Macquarrie 1982, p18): since so much is *not* subject to free choice – one's genetic inheritance, temperament and aptitude, one's social position and place in history – one's circumstances though varying are very much 'givens'. Thus, as he observes, “There must always be a tension between human freedom and all the sheerly given factors that belong equally to human existence but stand in the way of freedom.” (Macquarrie 1982, p19). Inseparable from human freedom is anxiety: not just the fear of being deprived of what freedom offers but the dread of the overwhelming responsibility which it brings - “Anxiety is the dizziness of freedom, when freedom gazes down into its own possibility, grasping at finiteness to sustain itself.” (Macquarrie 1982, p20)! There is here a reflection of the existentialism that influenced Macquarrie in his earlier writings, with its emphasis on human uniqueness as a “standing out from the world of entities” (Morley 2006, p176): it is the facticity of the human condition, faced with freedom, that causes anxiety. Even so, for him, in spite of the tensions and in spite of the threats of disruption, freedom, he believes, is worth maintaining and increasing. It is so because it is essential to the human adventure and without it “a person ceases to be that

unique being" who has had a hand in "making his nature out of as yet plastic possibility" (Macquarrie 1982, p21). Freedom then represents the openness of the human being to *possibilities*. With transcendence being "the continuing process of creativity and development which flows from that freedom" (Macquarrie 1982, p26), the possibilities that exceed the limits of the givens come to fruition as an enrichment of life. In this openness, Macquarie's existentialist concerns are reflected: in relating the matter of 'what it means to be human' to the awareness of temporality and knowledge of human existence, he sees the capability to achieve what is humanly possible (Long 2006, p161). Nevertheless, Macquarrie shows his divergence from some existentialists, where sociality is acknowledged but not developed: but for him the transcendence of the self towards otherness is of fundamental importance (Morley in Morgan, R. (ed.) 2006, pp173-174).

For the Christian theologian transcendence has particular relevance. The traditional view of divine transcendence refers in a general way to "all those ways in which his [God's] being is and must be different from the being of man" (Macquarrie 1982, p34); God is transcendent over the whole of creation. For some, this makes God the enemy of human transcendence. Much the same may be said about freedom; if freedom is thought of as a human right, and something to be claimed, then the all powerful creator "may seem to stand in the way of it" (Macquarrie 1982, p23). But, as Macquarrie argues, if human transcendence is accepted as a reality then it provides a clue to the transcendence of God – what has been called 'relocated transcendence', finding the *locus* of transcendence in humanity (Macquarrie 1982, p25) and suggesting an analogical clue to the transcendence of God through "our own human experience" (Macquarrie 1982, p36). Divine transcendence then takes on not a static otherness, but a going out from himself towards new goals, analagous to the goal of human transcendence which is God. Implicit then is the freedom granted to humanity of having a share in God's continuing work of creation – but it needs on humanity's side, a response: "man is God's risk" (Macquarrie 1982, p23). Though at God's risk, transcendence, together with freedom, for humans provides a potential partnership with God, who is thus, recognised as "the unsurpassable inspiring genius of all freedom, not the all-determining coercive tyrant" (Macquarrie 1982, p37).

Such a picture of the emergence of the individual by the continuing process of creativity and development of transcendence flowing from freedom, may seem, and may remain, an ideology of philosophical theology, unless its meaning becomes clear in the reality of its

relevance to the human person – to a self or an ego. With egoity - “the condition of being an ego or self” (Macquarrie 1982, p38) – lying at the heart of the human recognition of oneself as 'I', Macquarrie builds up the logic of the self through a blending of the biological interpretation of freedom with the theological understanding of transcendence. Keeping always to the fore the notion of the conscious self as the 'leading edge', imbued with purpose and direction, he shows how a survey of the animal kingdom gives perspective to the emergence of a forward direction in bodily development towards brain formation and thus 'mental' life in the more complex species. For *Homo sapiens* this means the possession of perceptions of every kind that provide the wealth of experiences that are unified through the 'control centre', which is the ego – not just at the intellectual level, but in practical terms, perhaps putting “practical reason before pure reason” (Macquarrie 1982, p39). It is here that Macquarrie draws his distinction between the self and the person - “whereas the self or ego is present from the beginning of life as the 'leading edge', ... the word 'person' indicates a stage in the development when some stable characteristics have emerged” (Macquarrie 1982, p43). To obtain a clearer idea of the concept of the 'I', he draws a further distinction – that of the subjective view of the self and the view of the self as an object. For him, the distinction is all important; there is a self-awareness that comes before objectification – it cannot be empirically demonstrated but is a necessary condition for any such demonstration of the self objectively (Macquarrie 1982, p44). It is through the subjective view of the self that the awareness of a personal identity comes and the feeling of being 'myself' throughout a lifetime and of death-awareness as the final point of the finite existence. Furthermore, it is only subjectively that the 'internal relations' of the self become apparent – the idea of 'being myself' or 'not being myself' (Macquarrie 1982, p44). With this goes the feeling within the self of a unity, but also of conflict – seen by some as the 'true' and 'false' self, but, by Macquarrie, through the directedness that freedom and transcendence gives to human existence, as part of the development of the human person. But, as a realist, Macquarrie acknowledges that the subject – the self – is not moulded without involvement with other persons and things (Long 2006, p169, note 1). However, with this goes the “tendency towards egoism” (Macquarrie 1982, p45) where the *interests* of self are put before those of others – where the natural direction of the human being ceases to be outward through transcendence. Egoism then, proves to be a false direction in which to seek realisation of one's humanity. In Christian doctrine this 'human paradox' of the conflict between self-fulfilment and self-renunciation is recognised as not contradictory but rather *coinciding* as revealed in the sacrificial life of Jesus, where the

bounds of human fulfilment were uniquely burst through self-renunciation (Macquarrie 1982, p46).

The duality that has been observed so frequently in the study of the individual human being becomes apparent in any attempt at establishing the nature of self in relation to body – the traditional 'body and soul' difficulties arising with the problem of *embodiment.* For Macquarrie, “the familiar contrast that we make between 'body and soul' focuses many of the polarities of human existence” but, in addition “overlaps them” (Macquarrie1982, p47). By this he is suggesting that in recognising the contrasts observed as 'poles', the possibility of a *synthesis* rather than a separation emerges where “this synthesis is a person” - each human individual being neither an animated body nor an embodied soul but understood as “a single reality” (Macquarrie 1982, pp49,50,53). Furthermore, such a synthesis does not preclude internal conflict for it is possible for the person to experience tension and alienation between the conscious centre of the self and the body and it may well be said that “there is still the task of synthesising the different and possibly conflicting tendencies within the human person” (Macquarrie 1982, p55). Macquarrie takes this further; the body being located in the material world is the source of the sensations [such as sight, sound and touch] that create the awareness of it, whilst apprehending the significance of the world is the role of the emotions. Each is of importance, but it is the emotions, having the quality of being either affirmative or negative that are “subjected to the critical scrutiny of reason” - tension then “will always be felt in temporal existence” (Macquarrie 1982, p57), that existence being in embodied form.

The role of cognition, however is important – if to know the world is to transcend it, then through intellectual activities, to know oneself is to transcend oneself (Macquarrie 1982, p59) – not just in an objective sense but as a fundamental awareness of oneself. Knowledge of the human reality though, has, in Macquarrie's opinion to be viewed in a broad perspective: much that is known is, without question empirical, but there is, in human cognition, much that cannot be verified by sense – experience, moral, aesthetic and religious experiences, for instance, being beyond empirical investigation (Macquarrie 1982, p60). The question arises as to whether it is only objective knowledge that can claim to be valid – making personal knowledge therefore irreconcilable to it. In the context of the broader view, the answer that is offered is “That knowledge of facts expressed in propositions is one kind of knowledge amongst others, and has to be considered in the

context of more direct forms of knowledge by participation, including knowledge of things, knowledge of other people and knowledge of ourselves." (Macquarrie 1982, p67). Nevertheless there is, in the acquiring of knowledge of others and in oneself, the possible loss of validity in the prejudice of finite humans. It has to be recognised that "Human knowledge will never be purely impersonal, value-free or interest-free." (Macquarrie 1982, p70). There is a need to avoid or eliminate one-sidedness and distortion – and also to acknowledge that some of a human's acquired comprehension, such as through religious knowledge, does in fact come close to wisdom.

A further aspect of the significance of the embodiedness of human beings is how their lives are "inextricably bound up with the physical universe", putting them in direct relation to material things expressed by the word 'having' (Macquarrie 1982, p72). It is the 'level of having' that is stressed by Macquarrie; for him, there is a minimal level which is essential for a truly human life and that basic level varies with the circumstances of time, with history, and place, throughout the world - "The level of having that enabled our ancestors to emerge from savagery to a tolerable human existence thousands of years ago is obviously different from what is required for human dignity in an affluent society of the present time and that is different again from what is required in another part of the world where the development of material resources may hardly have begun." (Macquarrie 1982, p73). Besides minimal requirements for life, 'having' includes property – ownership, both in terms of material possessions and of rights – an institutionalised form of having which is seen as of special relevance to fulfilment of human possibilities (Macquarrie 1982, pp74-75). How far 'having' in any form, is an enhancement of human being is questionable, and could it be even a diminution or a threat? Whilst the right balance would seem to be what should be aimed at - "maintaining oneself between the floor of having, below which humanity is threatened by dehumanizing deprivation, and that ceiling of having above which the threat is a dehumanizing excess of consumption" (Macquarrie 1982, p81) – is, and has been, it would seem, the problem for human individuals ever since the awareness of self became associated with the materials of the inhabited world.

Although the quality so far surveyed, of freedom and transcendence, egoity, cognition and having, relate to and help to define the individual embodied self in the progress towards becoming a unique person, there have been pointers throughout of the relationship between the individual existence and the social existence of that person – the individual

pole and the social pole, though distinct are inescapably linked. In fact, “each human individual, in spite of all his uniqueness, is inevitably involved with others in social relations” (Macquarrie 1982, p88) – not just involved but dependent. Macquarrie reflects on whether or not this has always been so, or was there “a time in the dawn of human history, when each individual did everything for himself” but, through exhibiting personal sociality, there was a “surrender of individual self-sufficiency and its replacement by interdependence” (Macquarrie 1982, p88). If this was so, however it came about, yet another source of tension for human beings comes into the picture, the tension between individuals and society – another task for humanity where a balance has to be sought if the possibilities for truly human individuals are to be fulfilled. Faced with what he calls 'alienation', Macquarrie traces the roles of socially focused natures of human conscience, commitment and belief.

Keeping always in mind that it is individuals that constitute a society, Macquarrie sets the specific concept of personal alienation in the general context of “the alienation of the human being from his humanity” (Macquarrie 1982, p106). Humans are conscious of being alienated from the world, from one another and as has become apparent in the study of the self, of a deep inward alienation within one's own self, stemming, it would seem, from the loss of fundamental freedom “the surrender of the freedom of being” (Macquarrie 1982, p81). As with the conflict arising between 'body and soul', there is a 'springing apart' and a “consciousness of self as a divided nature” (Macquarrie 1982, p108), or a feeling “that human life is in one respect or another not what it ought to be” (Macquarrie 1982, p125). For the individual, then, the question that arises is how this alienation may be overcome. It is here that the place of conscience has to be considered “for conscience is an intimate way in which we are disclosed to ourselves” and at its deepest level, it has to do with “the formation of character and personhood” (Macquarrie 1982, p125). When faced, however, with what conscience is, he acknowledges the wealth of divergent opinions, but out of these he traces a set of apparent contrasts which, in his view, stress different aspects of a 'complex phenomenon'. Conscience may be thought of as dynamic in its future-orientation, yet static when aiming to maintain past standards. Autonomy is evident when one's freedom is being exercised though not so where the standards of an authority are being accepted. Actions may be guided by the broad outlook of a goal or ideal, though equally inspired by a particular issue (Macquarrie 1982, p127). Whatever the nature of the incentive, it is frequently referred to as a 'call' and this too needs clarification: the function

of a call is not to enforce conventional morality but rather to bring the person called into a new self-understanding – reaching "him who wants to be brought back" (Macquarrie 1982, p130). The call though is not from some external authority, but from the inner self – "from the authentic self to the actual self" - and having no specific content defined in advance, for each human's freedom is promoting a continual learning process for the self. Ethics will inevitably be challenged, but without this new level of conscience, based on the "awareness of tension within oneself", it is very hard to see "how we could account for moral progress" (Macquarrie 1982, p132). This does not mean that ethical issues judged on this basis have no content, it is that "If a person realises his own possibilities, he has become a truly human person and since each individual is unique, there can be no one pattern." (Macquarrie 1982, p135). The end point, however, must not be lost sight of, the goal, the supreme ideal or the isolated act done or contemplated, must be pursued by way of commitment – commitment being "The acceptance of a continuing obligation to pursue some goal or policy of action." (Macquarrie 1982, p140).

Although for Macquarrie, this definition is a provisional one, its value lies in the interpretation of what is implied by 'obligation'. An obligation is a bond and by being freely accepted, becomes "part of a mature freedom in which energies are directed into chosen channels" (Macquarrie 1982, p140). Taken in its fullest sense, this is an undertaking that involves the whole person – a submission of oneself, as Macquarrie sees it, where three aspects can be discerned, self-forming, self-transcending and self-limiting (Macquarrie 1982, p142). Given that much, and perhaps most, of the individual has been determined by heredity, culture and environment and beyond personal choice, the shaping of the life and personhood remains undetermined and open, becoming identified, through experience, as a unique self. Decisions made in response to the awareness of a summons of conscience contribute to this building up of character and help "to make someone one kind of person rather than another (Macquarrie 1982, p142). A commitment if made implies consistency and is thus a continuing process and, to be valid is directed not inwardly towards self-interest but "stretching itself beyond any narrow egoism", or self-transcendence (Macquarrie 1982, p143). As with conscience, commitment is dynamic and grows and matures as responsibilities emerge and risks become apparent: "We cannot know the full content of the commitment or all that it is going to demand until we have embarked on it and are living it out." (Macquarrie 1982, p149). There is, he says, something in the object of a commitment, either impersonal or personal, which has done

this – it is the *appeal* of that 'something' that is responded to by the commitment, not an autonomous effort by the observer of the 'object'. Whatever the nature of the appeal it is seen thus as a 'gift' – something given in the first place and then as a support to the recipient – the one responding in a commitment (Macquarrie 1982, p150). This is certainly a 'turning of things around' but, for the Christian, it is borne out clearly in the interpretation of the response of humankind to the commitment of God to humanity as expressed in the biblical testimony to "the covenant which God makes with his people" that shows the human response as resting on God's prior commitment - "we love because he first loved us" (Macquarrie 1982, p151).

Christians may also find understanding of a human commitment in the interpretation of the grace of God's self-commitment bestowed through the incarnation, in which "he comes not in majesty and power but in vulnerability, and places himself at humanity's disposal", thereby not only eliciting a corresponding commitment on the human side but sustaining that commitment and making it possible (Macquarrie 1982, p153). Whilst this may be taken as an explanation of the full meaning of commitment there is underlying it, a dependence on the validity of the source of the appeal that evokes a commitment. Where the source is God, there is confidence for the believer, but in Macquarrie's view, there is a belief element in any commitment, whether religious or secular (Macquarrie 1982, p15868).

By distinguishing 'belief in' from 'belief that', he makes clear that for validity, the former must be based upon the latter: for belief in a cause, one must be assured that the theory behind it is true. But truth of this nature must be distinguished from empirical knowledge if it is to apply to every kind of 'belief in' and must be seen to include that for which there is no concrete evidence or scientific proof – that which goes "beyond the level of our ordinary beliefs" (Macquarrie 1982, p159). This is not a description of an inferior or provisional form of knowledge but it gives to belief a provision for the stretching of the human being beyond himself – an element in "the human search for a vision that will make sense of human life and the dignity that we feel belongs to it" (Macquarrie 1982, p163). If this involves an 'imaginative leap' between evidences and transcendent belief, it also provides grounds for a continuity between what is rational and what is probable, the former 'pointing' in the direction of the latter. The evidence the process provides is grounds not for certainty but for probability – grounds for not abandoning the belief but for holding firm to the

commitment until evidence points towards improbability. The role of understanding in relation to belief, is, of course, being questioned here – is it possible to have a transcendent belief without understanding? In answer to this Macquarrie offers the reminder that understanding may be a matter of degree – it may be imperfect, partial or incomplete and therefore open to change (Macquarrie 1982, p166). In reality though, this has to be seen in terms of 'how it shapes a human life': the element of risk seems even greater in relation to transcendent beliefs than in conventionally understood ones as with the transition from conscience to commitment, risk-taking cannot be denied in the choice of belief as the basis for converting commitment into action. But as Macquarrie points out "life itself seems to call out for some affirmative act of belief" and human reason has "a natural tendency to transgress its limits in search of an ideal without a flaw, a concept which completes and crowns the whole of human knowledge" (Macquarrie 1982, p171).

In his search for self – the personal human being – by considering, as he says, "a great many aspects, one after another" (Macquarrie 1982, p9), it is here that Macquarrie turns to those which are reflected in the way they are expressed in 'real' terms – in Love, Art and Religion. For a human individual to achieve fulfilment, there has to be a shift in 'the centre of gravity' from the self's own interests to those related "to other people, to causes, to institutions, to nature, to God or whatever it may be", as expressed in its widely varying nature by Love (Macquarrie 1982, p172). In examining the deeper realisation of the nature of love and distinguishing it from sentimentalism, he maintains that it needs to be correlated with understanding and knowledge – both "of itself and of the world in which it is exercised" (Macquarrie 1982, p173). He considers the subject of love, then, as "concentric circles ... beginning with self-love or self-respect and then moving out into successively wider areas" (Macquarrie 1982, p177). Whilst love is interpreted in depth by religions and by Christianity in particular, the question of self-love rouses much disagreement. For some it is a contradiction in terms or even the very opposite of Christian love (Macquarrie 1982, p174), but when interpreted as self-respect it turns from any idea of self-hatred to that of recognising each individual's life as "a trust, to be regarded with proper care and responsibility" (Macquarrie 1982, p177). Taking its place then, at the centre of 'concentric circles', self-love goes hand-in-hand with love for others, for "Each person is a social being and his best interests or happiness is bound up in the interests of others." (Macquarrie 1982, p176).

As epitomising the expression of the aspect of the human person, Art, rather than emerging from an individual's caring response to the needs of other people and things as with love, seems to “spring from a surplus of creative energy that goes beyond what is merely utilitarian” (Macquarrie 1982, p192). It is characterised, Macquarrie says, by spontaneity and carefreeness, as is play and also humour – all necessary ingredients of a truly human nature (Macquarrie 1982, p189). In song, words of a poem are combined with melody, but the music may also be adding a new dimension, “expressing something of its mood and insights” (Macquarrie 1982, p196). The visual arts may, likewise, depict a particular form of beauty through colour, light or texture, and yet set forth “spiritual truths that escape linguistic expression” (Macquarrie 1982, p196).

Religion has, for millenia, in Macquarrie's opinion, dominated and coloured all other human interests, and even if no longer able to hold its place, the religious spirit endures “because it has deep roots in our human nature” (Macquarrie 1982, p199). Religious beliefs, justified by tradition and backed up by some sort of revelation, were called in question by the Enlightenment's challenges of authority and reason, but it was the post-Enlightenment concept of phenomenology that made human persons experience the centre of religious philosophy - “the conditions of human experience and what these imply for religion, ... experiences which bring home to us, the understanding of our finitude” (Macquarrie 1982, p200). For true religion though, the human person must be in search of a 'foundation' – an inner drive towards fuller being through a “sense and taste for the infinite” (Macquarrie 1982, p201). Through the widespread interpretation of human experiences with a bearing on religion, Macquarrie suggests two main streams which though distinctive are complimentary, the negative and the positive, and one or the other, he believes is likely to be dominant in any individual person (Macquarrie 1982, p207). The negative type is characterised by an extreme awareness of finitude, the inability to fulfil the demands of existence and consciousness of such conflicts as between responsibility and moral powerlessness, rationality and irrationality, alienation and belonging and “the taste for the infinite and the undeniable evidence of finitude” (Macquarrie 1982, p208). The positive arises from an inward drive towards God – the ultimate goal of transcendence.

Whilst, through the expression of the many aspects of the self, love, art and religion have, as their foundation an inner drive motivated not only by a desire to know and understand but also by a “sense and taste for the infinite” (Macquarrie 1982, p201), there is, in each,

an underlying hope of fulfilment. But however optimistic these means of expression may appear, there are dark and negative aspects which have to be faced, for they “seem to pose a challenge to all that has been said about commitment, belief, love and religion” (Macquarrie 1982, p222). It is in this context that Macquarrie considers suffering and death. It seems to him that here there are aspects that are the opposite of action - “something happens to me”, for a chain of events “has been initiated outside of my control” which “impinge upon me and involve me” (Macquarrie 1982, p224). Experience shows that human existence is threatened constantly with suffering and death, but it shows also the absurdity of hopelessly rebelling about them, the realisation of resignation being equally absurd – or is there always “an irremovable question mark”? (Macquarrie 1982, p224).

When the dilemma of rebellion or resignation is encountered through suffering, it finds its “most profound and appropriate expression in Christianity” (Macquarrie 1982, p224), where through various theologies, Christ's own sufferings are interpreted, through atonement, as “bringing about a quality of human life more profound, more mature and more satisfying than would have been possible ... in a life untouched by suffering” (Macquarrie 1982, p225). For Macquarrie this reverses the role of the sufferer from having the negative quality of something 'happening to me', to an affirmative one whereby through integration into human life, there is an increase in the value of that life. Seen in this light, compassion for a fellow sufferer is aroused most deeply, through personal experience of a similar pain, deprivation or bereavement. Even without experiencing a particular form of suffering, the very concern stimulated by vulnerability and distress observed in others can draw people together – many links “binding us all in the solidarity of human society” (Macquarrie 1982, p228). It is this hope that suffering may be felt to be an 'additional agency', which together with grace and effort, contributes to the drive towards transcendence. Not all will agree and some, faced with the excesses of suffering, will see an insensitivity in any attempt to explain them. But for others the contribution of the inexplicable to 'soul-making' gives a positive value to its mystery - “faith and trust need to be challenged to the utmost by that which the mind cannot grasp or rationalise” (Macquarrie 1982, p231). Evolutionary science suggests that the intensity of suffering increases with the complexity of bodily development – the higher the level of personal being, the greater the vulnerability to suffering. This implies that God must suffer more than anyone else - “If God is love, then must he not be vulnerable to suffering?”

(Macquarrie 1982, p231).

Death, however, is a different matter: as with suffering, it is a challenge to be faced by each individual human as much in relation to oneself as in regard to other people - “Death and dying enter into human experience, whether the death of others or the anticipation of one's own death, and, more than anything else, gives us a sense of the finitude and even the precariousness of human existence.” (Macquarrie 1982, p233). But herein lies a contradiction which must be added to the challenge: whilst death is the one event that can be predicted with absolute certainty about anyone, when, where and how it will happen are – experience of life shows – entirely uncertain (Macquarrie 1982, p235). For some, this removes from life its ultimate meaning, or even if human life is just “a mere bi-product of forces which ... are Godless and hopeless” (Macquarrie 1982, p238). To others death represents the final horizon defining the boundary of finite life – or “the final chord of a great symphony” (Macquarrie 1982, p241). For Macquarrie though, death like suffering can make contributions to humanity – the vanishing-point of death being a necessity for the structuring and perspective of a human life. A human life in time can, in his view, have a meaning and unity, but only if there is an end to it - “a boundary that gives a perspective within which priorities can be set and various events and possibilities of life seen ... as parts of a sense-giving whole” (Macquarrie 1982, p238). Making the assertion that his arguments are *without any appeal whatever to the possibility of a life beyond death*, he lays this appeal at the door of 'hope'. Nevertheless, having found that, in relation to human lives, death is not entirely dark, negative and frustrating, “we can explore the possibility of hope beyond death without being guilty of mere escapism” (Macquarrie 1982, p242).

“Human beings live in hope”, Macquarrie declares and if it were not so “it would be impossible to go on living” (Macquarrie 1982, p243) – it is the motivation for going forward into the future and, on the whole, predominates over fear. It may here be linked with the human longing for security for the individual in the future and even for eternal life (Shults 2003, pp218-9,p186). It is also the spur to human transcendence and implies trust in the future and thus, however it may be expressed, an important element in belief in God (Macquarrie 1982, p245). By introducing a religious dimension, he is showing his mistrust of the alternative for humanity – the idealised hope for society depicted as the 'dream-land of utopia', where though ameliorating human life, can, in his view, neither transform nor renew human nature on which society is based, nor even transcend death (Macquarrie 1982, pp247,249). Hope that reaches beyond death is, he says, extremely ancient:-

> In prehistoric times, long before any records of what people were thinking had been written down, there is unwritten evidence to show that these distant ancestors of ours had been thinking about death and were already entertaining hopes that reached beyond death. That evidence comes from the manner in which they disposed of the dead. The bodies of the dead were buried with the greatest care and often implements or ornaments that had been used in life were buried with them, as if they might still have need of them. Sometimes the bones were daubed with red ochre, the red symbolising blood and therefore life. All this bears mute testimony to an as yet inarticulate hope for the dead perhaps as long as half a million years ago. (Macquarrie 1982, p249).

He goes on through history, showing how through festivals and tombs ancestors were revered and a final judgement believed in, with a glimpse of a transformation of human existence. Seen as superstitious today, it nevertheless persisted as a trust that life was not annihilated by death. For Christians though, the creeds explicitly affirm, in addition to the resurrection of Jesus, the general resurrection of the dead. In this, Macquarrie sees the past being carried with each individual into the present and a possible unity and "simultaneity of experience, in which past present and future would be gathered up together" - and that might be the meaning of 'eternal life' (Macquarrie 1982, p251). Any attempt to spell out the nature of a hope beyond death, are, he says, necessarily speculative, but "the study of the human being must go beyond empirical description to the imaginative exploration of possibilities" (Macquarrie 1982, p252).

Discussion of the approach of philosophical theology

The final chapter of *The Christlike God* begins with a realistic statement by Bishop Taylor of the meaning the concept of God portrayed would have for the individual person who accepts it. "Belief in a Christlike God", he says, "has wide-ranging implications for the believer's personal lifestyle and the style of society she or he thinks is worth striving for", since, "if providence works not by interventions but from within the interplay of created beings", worshippers of such a God are "committed to much rigorous re-assessment and self-examination" (Taylor 1992, p256). For John Macquarrie, as he makes clear in *In Search of Humanity*, it is this sort of commitment that "is needed for the formation of a mature human person" (Macquarrie 1982, p1402), and his study of the various aspects of the self that provides, for those choosing to be committed, a reality to any such undertaking. His book, thus, presents, through the addition of philosophy, an area of Christian knowledge and understanding not covered by the theology of the doctrine – the unique human

individual – to lie alongside the uniquely human Jesus, through whom the Christlike God is revealed.

What comes through, with clarity and conviction, from both authors is the essential meaning, for the human individual, of freedom and self-transcendence and the interpretation of the two in terms of being made 'in the image of God'. Macquarrie's tracing back of human freedom to the primordial conditions of creation, with transcendence as the continuing of the process for humanity, gives the possibility of a driving force to 'go beyond' and exceed the limits of the natural laws of creation. Through this concept he sees the 'image of God' as the potentiality of what each one might grow into (Macquarrie 1982, pp26,33). Emphasising the holding back of God's autonomy in creation, Taylor sees the 'letting-be' of creation' as a necessary condition - “Even at the lowest levels the separate beings are presented with states of indeterminacy so that latent potentiality is free to change. The degree of independence increases all the way until the human spirit is attained.” (Taylor 1992, p200). There lies here then, in each concept, the 'origin' of the power of self-transcendence which may be seen as the 'image of God' in humanity. There is a suggestion of partnership too – essential criteria of theology passing through into philosophy and allowing a comprehensive meaning to flourish, in the interest of human understanding.

It may seem that here Macquarrie offers only a limited view of 'the image of God'. Theologian Philip Hefner observes that while there is an assertion in Christianity that the image of God is instantiate in Jesus, there is no consensus of what this means (Hefner in Gregersen, N.H., Drees, W.B. & Görman, U. (eds.) 2000, p88). For him the implication is that humans portray or represent God in the creation: not that they are superior or dominant, but that there is a purpose – purposehood in relation to God, through freedom, being not only possible but necessary. Thus, there is a furthering of Macquarrie's notion of partnership with God through the given potentiality of transcendence. Beck and Damarest in *The Human Person*, also indicate the need for interpretation, scripture giving no systematic explanation of the *imago Dei* (Beck and Damarest 2005, p90). They offer the idea of 'image of God' as 'being shaped in the likeness of Christ' and so serving a purpose for God as representative in the world (Beck and Damarest 2005, p90). With this goes a complexity of inner and outer being – extending then, Macquarrie's suggestions of the sense of direction experienced by humans and their awareness of a variety of ideas

through transcendence.

A wider view of the philosophy of the self from philosophers with a range of concepts is presented in *From Soul to Self* by M. James C. Crabbe where chapters by different authors give perspectives historical, theological and materialistic. Starting out with the contention that the essence of mind is consciousness, the theme put forward is that what has exercised thinkers in this field over many centuries is the relationship between the mental phenomena and the physical phenomena - the mind-body problem (Crabbe (ed.) 1999, pp1-25). Richard Sorabji amplifies ideas on the soul and the self from the historical perspective, Anthony Kelly reviews the writings of Aquinas on the soul, interpreting Greek philosophy in accord with Christian teaching and Galen Strawson, a philosophical materialist, 'develops the sense of self' as essentially the 'mental self', materialistic, mental and real.

In ancient philosophy, much discussion and debate, agreement and argument was around material versus immaterial and mortal versus immortal and from there to the dispersible or the everlasting self (Sorabji in Crabbe, M.J.C. (ed.) 1999, pp10,19). Of especial interest, however, to Macquarrie's philosophy of humanity, is the range of views which revolved around personal identity – the uniqueness of the individual, how it could be established through time and space in particular. In fact, as Richard Sorabji suggests, ancient philosophy was no less engrossed with other questions about the self that are central today (Sorabji in Crabbe, M.J.C. (ed.) 1999, p22). From the variety of ideas held by the Stoics about the cycles of the universe where everything, including people, 'reappeared' through history, came the question as to whether any one individual so arising would be the same or a different person – could there ever be more than one 'me' or am 'I' unique? Drawing on Plato and Aristotle and those who took up their arguments, two possible answers are put forward by Sorabji. Postulating that there is a “continuation of a uniquely distinctive bundle of qualities throughout the whole of one's life”, even though there is a change in 'primary matter', the form that that matter takes and the indivisible essence that involves both form and matter persists (Sorabji in Crabbe, M.J.C. (ed.) 1999, p23). It is by possessing these uniquely distinguishable bundles of qualities that individuals, besides having a continuing identity, are differentiated as unique individuals (Sorabji in Crabbe, M.J.C. (ed.) 1999, p29). Though, for Macquarrie, uniqueness of the individual was 'assumed', through the reasoning of such philosophers as these, such an assumption would seem to be justified.

Anthony Kelly's review of the philosophy of Thomas Aquinas, takes on the *nature* of that unique human individual. Aquinas considered, he says, that "there is not, outside the mind, any such thing as human nature as such: there is only the human nature of individual human beings such as 'Tom, Dick and Harry': a human individual is 'form embedded in matter' and as such, cannot be the object of pure intellectual thought (Kelly in Crabbe, M.J.C. (ed.) 1999, p37). Underlying this contention is Aquinas' particular understanding of the 'individuation of material objects' which could not be grasped simply through co-operation between intellect and the senses. He believed that the intellect had two 'powers' – the 'agent', which abstracted ideas from sense through experience, and the 'receptive' which acted as a storehouse for those ideas. In this way he believed humans "can abstract ideas from material conditions of the natural world" and "are able to not just perceive but to think about and understand the world" (Kelly in Crabbe, M.J.C. (ed.) 1999, p35). Holding to this would give grounds then for both the objective view of human nature being characteristic of only one human individual, but also for the subjective concept of a human person as one 'self'. Here Kelly is in full agreement, "I and myself are one: myself is what I am, not a self which I have" - "my self is nothing other than myself" (Kelly in Crabbe, M.J.C. (ed.) 1999, pp39-40). This links up with Macquarrie's discussion on embodiedness and the idea he develops on the bringing body and soul into synthesis as the task of 'becoming human' (Macquarrie 1982, p48). For Kelly, one cannot separate personal identity from bodily identity - "What makes my unexpressed thoughts *my* thoughts is that they are thoughts which, if they found expression, would be expressed by my body" (Kelly in Crabbe, M.J.C. (ed.) 1999, p46).

For Galen Strawson, the self is so much a 'mental thing' that the body is felt to be "a vehicle or vessel for the mental thing that is what one really or most essentially is" (Strawson in Crabbe, M.J.C. (ed.) 1999, p132). He replaces the idea of the soul not with the self but with 'the sense of self' – the sense that people have of themselves as "being, specifically, a mental presence; a mental someone; a single mental thing that is a conscious subject, that has a certain character or personality" though distinct from "experiences, thoughts, hopes, wishes and feelings" (Strawson in Crabbe, M.J.C. (ed.) 1999, p131). For this he uses the term "*mental* self" - not in the sense of a personality but in the sense of a reality and "something that actually exists" (Strawson in Crabbe, M.J.C. (ed.) 1999, p149). This is not exclusively 'materialistic' but, through incorporating the elements that belief in an

immaterial soul depend upon, the mental self exists “self-sufficiently, in a sphere of being that is quite other than the sphere of being described by physics” - things may not *be* as they seem, but they “certainly seem as they seem” (Strawson in Crabbe, M.J.C. (ed.) 1999, p133). Furthermore, the mental self is quite distinct from such mental features as beliefs, preferences and memories – it *has* them but is not constituted *out of* them: whilst experiences are related to other than the mental self, it is above all the mental self that is the 'subject of experience' – an essential constituent of consciousness (Strawson in Crabbe, M.J.C. (ed.) 1999, p133). The mental self is also the 'active element' of consciousness – “the source of effort and attention ... from which ... emanate the fiats of the will ... the core and nucleus of our self” (Strawson in Crabbe, M.J.C. (ed.) 1999, pp137-138). However, in his view, it is not as some contend, that consciousness is fluid or has long-term continuity, but that the experience of consciousness is “one of repeated returns into consciousness from a state of complete, if momentary, unconsciousness” - consciousness is continually *restarting* (Strawson in Crabbe, M.J.C. (ed.) 1999, p45). This may seem somewhat at odds with Macquarrie's implication of the self as having the task of becoming a person through the experiences of a lifetime (Macquarrie 1982, p43). But when looked at more closely it appears that there is an agreement on the starting point – 'the moment' – it is the implication that varies. For Macquarrie, the human person transcends the moment into a span of time – brief spans into longer spans, beginning with birth and ending with death. Strawson, on the other hand, is considering how at any particular time, the mental self without any sense of having personality or long-term continuity, is “not just an abstract possibility, but a human reality”, thereby giving, for him the certainty that the mental self actually exists (Strawson in Crabbe, M.J.C. (ed.) 1999, p149).

Whilst these are certain philosophers' views, founded on each one's particular concept of the unique human individual as the 'self', whereas Macquarrie's stance is a theological one, there is a compatibility in the philosophy expressed. It is interesting to note that theological anthropologist, Le Ron Shults, endorses the philosophers' view of the change apparent today in the model of the 'self' over the ages: the relating of the self to 'knowing' rather than separating self from substance, makes the self “substantial and real” (Le Ron Shults 2003 p,181).

It is this 'reality', reflected by Macquarrie in his particular view of the self, that may be seen, by some, to stem from his existential theology. However, David Law, in examining

“Macquarrie's defence of existential theology” (Law in Morgan, R. (ed.) 2006, p34), sees the need for such 'defence' arising from a present-day view that “existentialism ... is no longer regarded as a significant way of doing theology.” (Law in Morgan, R. (ed.) 2006, p34). Arguing against this, he puts forward Macquarrie's case for “the viability of existential theology” (Law in Morgan, R. (ed.) 2006, p47). Of fundamental relevance to his view of humanity, in the modern world, is the conviction that there must be, through Christian theology, a point of contact with the secular world and that means that there must be common ground on which to meet. For Macquarrie, that common ground is provided by what we share – our humanity, for Christianity is a doctrine of man as well as God (Law in Morgan, R. (ed.) 2006, p48). But the gulf between the biblical writings of the New Testament and modern Western philosophy, has, of necessity, to be closed and it is in this that existential philosophy can play a role, for it has an affinity with the biblical knowledge of the individual human existence. Furthermore, “it does not de-personalise man ... but does justice to the claims of the individual personal 'I'” and, with it, “the individual responsibility before God” (Law in Morgan, R. (ed.) 2006, p50). Existential theology, in Macquarrie's view, is not the answer to all theological questions, but “a way of drawing out the significance of the Christian faith for the personal individual existence of the human being” (Law in Morgan, R. (ed.) 2006, p54).

Macquarrie's *In Search of Humanity*, as here presented and discussed, has provided a view from the associated discipline of philosophy of a theological concept of the individual person, extending it into the reality of the uniqueness of the individual. It is this, then, that is put forward to be considered in conjunction with the concept, from cognitive archaeology, of the origins of human individual uniqueness through a consideration of Renfrew's *The Ancient Mind*.

CHAPTER X: THE UNIQUENESS OF THE HUMAN INDIVIDUAL: AN ARCHAEOLOGICAL APPROACH

For science, judging by the outlook of the scientists whose views have coloured the discussion – biologists and specialists in other branches alike – there are limits to what science can explain about an individual human being. When faced with the phenomenon of human self consciousness – an awareness of self – such an issue may be seen as outside scientific terms of reference. It may even be impossible to be understood fully, or may be beyond the boundaries of human comprehension. But for some, how humans have, in mind as well as body, come to be as they are and when, is indeed a worthy pursuit. Such a view is held by Richard Leakey whose broad view of Palaeoanthropology has led him to say "our reality is rooted in our history" (Leakey, R. 1992, p311).

An interpretation, put forward in Renfrew's 'Ancient Mind' through cognitive archaeology with a background of pre-history, discussed in the light of current observations

Introduction

Epigeneticists, figuring out the meaning of 'tinkering', hold fast to the view that in human evolution genes changed and were deployed to give rise, through a series of transitions, to modern humans (Bock 2007, p16). Biologists, for whom human evolution through inheritance and selection is of prime importance in understanding the present day human being, go further. For them, humans, as participants in social life, are 'developed' human beings (Barnes and Dupré 2008, p256), their self consciousness being detected in the culture of the Great Leap forward, and later on in the complex lifestyles associated with sedentary life and agriculture (Ehrlich 2000, pp159-162, 307).

It is by taking into account the importance of selection pressures on inheritance patterns that an indication is shown of when and how such changes may have come about. The selection that humans, in a cultural setting, have in fact brought upon themselves is that of niche construction (Odling-Smee et al. 2003, pp254-5) – the field of the associated discipline of archaeology. Extending the processes of evolution to include, in human ecological inheritance, that of their culture, the authors of *Niche Construction* take up the archaeological concept of material culture – the way in which "modifications that organisms make to their environment ... feed back to affect subsequent evolution." (Odling-Smee et al. 2003, p357). Culture, often viewed as a cognitivist conception has to be

reviewed in the light of such a material legacy – the artefacts which have evolved through culture (Odling-Smee et al. 2003, p358). It is this concept which, in relation to human individuality, links the biology of modern humans with their history – the archaeology of pre-history through the artefacts of material culture. Nevertheless, the cognitive element of culture, though modified in this way, is still relevant - the evolution of human culture going hand in hand with the evolution of the mind of the human individual. It is, then, in the field of cognitive archaeology that knowledge of when and how it came about is to be explored.

Cognitive archaeology, "the study of past ways of thought from material remains" (Renfrew and Bahn 2000, p369), is recognised within the realms of New Archaeology as that branch of processual archaeology which aspires to deal with both symbolic and material aspects of early human societies and the individuals that formed them "in as scientific and objective manner as possible" (Renfrew in Renfrew, C. and Scarre, C. (eds.) 1998, p2). Such aspects of past societies are studied primarily through "the buildings, tools and other artefacts that constitute what is known as *material culture* left over from former societies" (Renfrew and Bahn 2000, p11). A succession of transitions can thus be identified, each retaining something of the past but passing on something new, yielding "the rich, multi-layered cognitive-cultural structure of the modern mind" (Donald in Renfrew, C. and Scarre, C. (eds.) 1998, p7). As a foundation for the concept, the human mind is assumed to have built up an 'interpretive framework' through experiencing the material world of society – a personal cognitive map, yet one capable of being shared within a community (Renfrew and Bahn 2000, p370). It may be said that the archaeologist who coined the phrase 'cognitive archaeology' is Colin Renfrew (Lewis-Williams 2005, p171): in his own words "I have myself a long-standing interest in these matters [the origins of human cognitive abilities]" and "see cognitive archaeology as one of the most interesting areas of archaeological research" (Renfrew in Renfrew, C. and Scarre, C. (eds.) 1998, p2). It is, then, through his 'cognitive' aspects of archaeology that knowledge of the mind of the human individual in prehistoric times – the 'Ancient Mind' (Renfrew in Renfrew, C. and Zubrow, E. (eds.) 1994, p5) – will be sought.

As discussed in Chapter V, evidence both of technical advances and symbolic thought and behaviour came with the emergence of *Homo sapiens* some forty thousand years ago: this was to be recognised as the 'Great Leap' forward associated with the culture of the Cro-

magnons, seen as the “35,000-year-old” Human Revolution” (Stringer 2011, p116). It is at a later period that the 'human revolution' associated, in Renfrew's view, with the emergence of 'mind', becomes apparent. Following the Upper Palaeolithic, where the lifestyle for humans was that of the hunter-gatherer, a time of sedentism is recognised by about 10,000 B.C. in some parts of the world and particularly within the Natufian culture in the Southern Levant. It seems that this phase was, for a time, associated with agriculture and a wide range of resourcefulness in the nature of material culture – but not writing. Since it is not until the early Bronze Age that culture included 'complex notations', which through the writings which remain, give a different way of discerning human thoughts. It is the period between these epochs that Renfrew's interest lies – the transition from Palaeolithic being the Mesolithic, the main era the Neolithic, and the latter part of the Neolithic merging into the Copper Age – that is to say some time before 7,000 B.C. to somewhere between 2,000 and 3,000 B.C. During this time climate and landscape underwent radical changes, transforming the environment and the lifestyle of the inhabitants as a consequence. It is against this background that Renfrew follows the 'ancient mind' as it changed and developed and took on the characteristics of the 'modern mind'. For this reason, a 'panoramic view' of this background is given as a preliminary to a presentation of his ideas. It is formulated from the ideas of archaeologists whose concern is that of material culture in post-Palaeolithic times and up to the Bronze Age in Europe, through the phases Mesolithic, early Neolithic and late Neolithic-Copper Age.

Mesolithic Period

The period of prehistory given the name Mesolithic is, for archaeologist Steven Mithen, difficult to define – the time boundaries for its start, following the Palaeolithic, and its end as the Neolithic emerged, are, for him “extremely fuzzy” (Mithen in Cunliffe, B (ed.) 1994, p79). Conventionally, the end of the Upper Palaeolithic is taken as the time in prehistory when the last glacial period had come to an end (Mellars in Cunliffe, B (ed.) 1994, p75), though the warming process had, it is reckoned, started much earlier, in Europe at any rate (Bailey and Spiking 2008, p361). The boundary with the Neolithic is equally difficult to define, though for somewhat different reasons – the environment so radically changed after the widespread melting of the ice, had been influenced by the activity of human beings: by about 7600 BC, across Europe (Whittle in Cunliffe, B (ed.) 1994, p136) man had

interfered with, and altered, the natural environment. This was a period of change, remarkable for the interplay of the environment with society, with widely varying results throughout the inhabited parts of the world, the Neolithic having, apparently, taken several thousands of years to spread across Europe.

The environmental changes were of fundamental significance to the inhabitants, for in addition to the warmer atmosphere, the melting of glaciers altered the land they inhabited: not only was there isostatic rising of the land in some areas through the reduced weight of the great ice sheets but also eustatic rising of sea level through the steady melting of the ice (Mithen in Cunliffe, B (ed.) 1994, p81) each causing vast changes in coastlines, isolation of land areas and new inland waterways, lakes and marshland. Together with this came changes in the nature of vegetation – what had been tundra became forest with the subsequent transformation in fauna, large mammals in herds giving way to small groups of ungulates and wider diversity of species of freshwater and marine fish, shellfish and wild fowl (Mithen in Cunliffe, B (ed.) 1994, p86).

Whilst human remains from this period are sparse and fragmentary (Mithen in Hunter and Richardson (eds.) 1999, pp43-44) in north-west Europe, though considerable in Israel and the Balkans, artefacts known to relate to this period have provided archaeologists with evidence, though 'patchy' for knowledge of certain aspects of the human Mesolithic way of life. Tools and the product of their use are of prime interest. The use of flint continued as in Palaeolithic times though using quarried stone as well as that found freely on the surface. However, the use of other stones is evident, such as quartz, slate and greenstone (Mithen in Cunliffe, B (ed.) 1994, p90) as is the variety of tools made from worked stone by processes such as knapping and retouching to produce sharp blades, chisel edges and awl points (Mithen in Cunliffe, B (ed.) 1994, p97). In addition, materials such as deer antlers, bone and wood seemed to have been employed as handles for the fine microliths used perhaps for scraping and associated tanning, of animal hides (Mithen in Hunter and Richardson (eds.) 1999, p45). 'Specialised' tools may well have been used for manipulating plant material such as fibres from plant roots which have been found to have bound twigs or reeds to form wicker-work for fish traps (Mithen in Cunliffe, B (ed.) 1994, p101). Highly significant, too, is the use of mineral materials for the early manufacture of pottery vessels in parts of Europe, particularly in the far eastern fringes, in Late Mesolithic (Bailey and Spikins 2008, p361).

Whilst evidence is sparse, tools must have been used in parts of Europe for the skill of canoe and paddle making (Mithen in Cunliffe, B (ed.) 1994, p106) used, it is thought for communication between groups inhabiting off shore islands (Mithen in Hunter and Richardson (eds.) 1999, p44) and also for widespread movement of obsidian, greenstone and amber for exchange or trade (Bailey and Spikins 2008, p373). Developments from such activities on the environment of the time are reflected in what is suggested, by archaeological evidence, of their means of subsistence – an immensely flexible hunter-gathering means of surviving (Mithen in Cunliffe, B (ed.) 1994, p106). A mixture of ungulates and smaller mammals were hunted which must have involved both strategy and the use of killing or wounding weapons - including bow and arrow and pit and trap constructions. Aquatic resources associated with advancing coastlines and inland water included salt water and freshwater fish, birds such as swan and gannet and also seals, porpoises and whales. Forests provided a rich variety of berries, fungi and nuts, open areas providing grass seeds which though not stored may have been an important element of human diet (Mithen in Cunliffe, B (ed.) 1994, pp106-109). What does not stand out at all clearly is how and where Mesolithic humans - individuals, families and groups - lived and formed their particular kind of society.

On the sites where evidence of dwellings is found and the settlements which seem to have become established in some parts of Europe during this period, there is a diversity associated with a wide range of frequency of occupation and variety of population size, tradition and enterprise. Evidence such as frequency of flint scatters, posthole arrangements and collections of plant and animal remains such as shell middens, supported by radiocarbon dating, gives a range of settlement pattern: small camp sites representing single occupation by hunters are recognised, as are areas of habitation, by larger groups associated with seasonal occupation, such as the butchery of carcases or the making and repairing of hunting equipment. Indications of year-round occupation are found, but only towards the end of the Mesolithic in parts of Scandinavia (Mithen in Cunliffe, B (ed.) 1994, pp111-117). The artefacts from such settlements both small and extensive, suggest to archaeologists a way of life that depended upon certain criteria. Though inferred as characteristic of some Palaeolithic hunting practices, it seems that following routines and planning strategies must have resulted from astute observation and decision making by the inhabitants of Mesolithic settlements. This would involve the

making of choices and the risking of personal safety (Mithen in Cunliffe, B (ed.) 1994, p118). With population increase, social conditions would have necessitated not only some organisation involving individuals, families and groups and thus some hierarchical structure (Mithen in Cunliffe, B (ed.) 1994, p119) but also a responsibility for young injured or disabled individuals (Mithen in Cunliffe, B (ed.) 1994, p121). Evidence here comes mainly through the Late Mesolithic phenomenon of cemeteries (Mithen in Cunliffe, B (ed.) 1994, pp120-121). Though varying in grave numbers and arrangement, excavations show indications of more particular ritual associated with burial than in earlier periods, as at the Bad Durrenberg burial where respect for shamanistic abilities associated with physical disability seems evident (Porr and Alt 2006, p405). It is the variety of position in which bodies have been laid out, the use of red ochre and the addition of various parts of different animals that suggest some deeper and more complex meaning than heretofore as do the quality of grave goods where age, sex or social status may be being acknowledged (Mithen in Cunliffe, B (ed.) 1994, pp123-126). That herein lie ideologies built around ancestral individuals suggests that they may be part of the apparent blending of utility and aesthetic significance in Mesolithic artistic creations – both in the rock art and in the stone sculptures found in parts of Europe (Mithen in Cunliffe, B (ed.) 1994, pp127-132).

As the features of Neolithic life begin to emerge from the Mesolithic, the fate of the individual and the role of each member of developing groups and communities are seen to be of real significance. As the population and technology progressed along with the changing environment and the beginnings of its exploitation by humans, complex factors of stress, from competition, for resources on the one hand and for power by individuals or groups on the other, are detected - a struggle to achieve and maintain a "standard of living in the face of continuous change" (Mithen in Cunliffe, B (ed.) 1994, p133). In hindsight, this would seem be a pointer towards the establishment of farming societies (Mithen in Cunliffe, B (ed.) 1994, p136). But for this to come about, Mesolithic foragers must surely have been making more and more complex decisions as they "went about their daily business" (Mithen in Cunliffe, B (ed.) 1994, p135).

Neolithic Period

The establishment of farming societies in Europe associated with the Neolithic period, conventionally extending through the millenia from 7000 to 4000 BC, or even into the

Copper Age (Whittle 1996, pp363&367), is characterised by a wide range of variation both in relation to locations and areas and in traditions and ways of life (Whittle in Cunliffe, B (ed.) 1994, pp136-137). But, as Alasdair Whittle points out, the artefacts relating to this period, are interpreted as indicating complexities which seem quite novel, particularly from 5500 BC in both the physical and the social landscape (Whittle in Cunliffe, B (ed.)1994, p137).

The environment varied, changes continuing in relation to post-glacial climate, particularly in the formation of coastlines, peninsulas and off-shore islands. Forests and woodlands became extended as did areas of cultivation, where there is evidence for the use of non-native cereals and the husbandry of domesticated animals (Whittle in Cunliffe, B (ed.) 1994, p136). The making and using of tools was widespread: the working of flint and obsidian indicate the use of cutting tools and polished stone axes, such as are found amongst household items and grave goods (Whittle in Cunliffe, B (ed.) 1994, pp 143,157-162). As new resources became available from other regions or through clearance of woodland (Whittle in Cunliffe, B (ed.) 1994, p165), crafts involving new skills were giving rise to artefacts of higher quality and sophistication. Figurines made in the Late Neolithic from fired clay and decorated clay tablets are found together with the beginnings of the extraction and use of copper as seen in beads and pins as well as in castings (Whittle in Cunliffe, B (ed.) 1994, pp147-148). But it is the immense variety and elegance of pottery that is remarkable, in Early and Late Neolithic enterprise, for its design and decoration (Whittle in Cunliffe, B (ed.) 1994, p151). So widespread is the culture of pottery, that it has been possible to trace styles in relation to both confined regions and expansions of population throughout Europe. Furthermore, the culture may have been used to “signal affinity and solidarity between widely scattered communities”, and yet to “define more restricted identities” in the social landscape (Whittle in Cunliffe, B (ed.) 1994, p161).

Regarding the usage of land by the growing population (Whittle in Cunliffe, B (ed.) 1994, p138), in addition to the clearing of woodland and the introduction of cereal growing, there is some evidence for enclosures possibly associated with the rearing of sheep, goats, cattle and pigs. Subsistence suggested by the evidence for these occupations is clearly supported by the continuing practices of hunting and fishing, there being evidence for improved seafaring capability in coastal waters involving the catching of whales (Whittle in Cunliffe, B (ed.) 1994, p151) and the transporting of animals by sea (Whittle in Cunliffe, B (ed.) 1994,

p153). There is evidence, however, based on carbon and nitrogen isotope analysis of bones, of a sudden change in north-western Europe, from marine to terrestrial diets early in the Neolithic (Richards and Schulting 2006, p448). Furthermore, pottery analysis provides evidence of diets containing high level dairy fat residues (Thorpe In Glørstad and Prescott (eds) 2009, p44).

The background to the interpretation of the wealth of artefacts being found throughout Europe is the type of settlement established by this time by the inhabitants of the Continent and probably by colonisers from adjoining lands to the East (Whittle in Cunliffe, B (ed.) 1994, p137). From 7000 BC onwards, a shift in the nature of settlement is apparent from short-term camp sites to clusters of solidly built houses suggestive of permanent occupation, forming hamlets or villages (Whittle in Cunliffe, B (ed.) 1994, p139). The presence of paths and sub-divisions indicate family or group occupation – repeated occupation being likely in view of accumulated decayed building material and detritus found in settlement mounds [tells] in the Balkans in the Near East (Whittle in Cunliffe, B (ed.) 1994, p140). An idea of a social life developing under the changing scale of living together comes partly from items of personal adornment such as beads, bracelets and shells, but most particularly from the variety of clay fired figurines representing animals and female humans both natural and anthropomorphic. Whilst caution is exercised in interpreting the 'imagery' depicted, since evidence is fragmentary, it is thought that "certain themes stand out" (Whittle in Cunliffe, B (ed.) 1994, p144). Emphasis on the female human may be associated with reproduction; connecting animal and human characteristics may indicate the connection of the living with the divine; figurines in dwellings suggests a means of identifying a group. The wide distribution of figurines could represent a concept of unity amongst communities. Taken further, it may be said that "such a world-view may have been at least as important as the practice of agriculture in the success of the Neolithic way of life." (Whittle in Cunliffe, B (ed.) 1994, p144).

Towards and following 5000 BC, cultural changes resulting possibly from a spread of agricultural communities, in phases, from East to West are observed within settlements (Whittle in Cunliffe, B (ed.) 1994, p155). Post-framed longhouses constructed from locally available timber show skilful design and variety of building size and plan, suggesting co-operative working and purposeful enterprise (Whittle in Cunliffe, B (ed.) 1994, p157). Cemeteries near settlements show planning in arrangement of graves and purpose in grave

goods, which in some cases seem to be for selected members of a particular region only (Whittle in Cunliffe, B (ed.) 1994, p160), though without any indication of particular regard for sex, age or status (Whittle in Cunliffe, B (ed.) 1994, p162). Furthermore, that revering particular ancestors ensures continuity with the community, is implied in the deposition of selected parts of human skeleton in numerous causewayed enclosures where earlier monuments have been given a new form (Smith and Brickley 2009, p81).

Thus, though varying with the widely dispersed and relatively small areas of settlement, this period, for Europe, was one of highly significant changes in both "physical and social landscape" (Whittle in Cunliffe, B (ed.) 1994, p165). Brought about by indigenous people and incomers, new resources and areas of settlement were giving rise to a "diverse material culture" (Whittle in Cunliffe, B (ed.) 1994, p166). Together with this – or closely related to it – went what seems to be a deepening of awareness of the meaning of community, of reverence for ancestors (Midgley M.S. 2005, pp120-121 & 132-133) and need for social relationships – what may be seen as "a new mental outlook" (Whittle in Cunliffe, B (ed.) 1994, p166).

From the Neolithic to the Copper Age

During the following 2000 – 3000 years the continent of Europe was to become more densely populated, a fusion of native and later arrivals giving rise to regional cultures in association with an agricultural way of life, such as the inclusion in secondary burial mounds, of Beaker pottery [associated with Bronze Age funerary rites] with cremated bones (Smith and Brickley 2009, p139). However, in the view of Andrew Sherratt, the period, though reflecting the continuing transformation of the environment as a temperate one with a landscape full of opportunities for exploitation by its inhabitants, is remarkable for the diversity of human activity which a wealth of artefacts reveals. For archaeologists, their findings are seen to throw light most particularly on the defining of groups within merging communities, together with the identity of individuals within established societies.

Traditional skills in building were giving rise to timber housing both domestic and for husbandry as revealed by earth mounds which were becoming more elaborate, resulting in monuments both funerary and ceremonial (Sherratt in Cunliffe, B (ed.) 1994, p169). Technology was advancing in the use of new resources – vegetable fibres and wool in

producing textiles, the elaboration of pottery by design and painting and the use of varieties of stone in the making of valued objects both useful and decorative (Sherratt in Cunliffe, B (ed.) 1994, p170). In addition, by the innovative smelting of ores, metals were coming more and more into use, copper and gold at this stage being cast or hammered to make objects of intrinsic value rather than of practical use: they may well have been employed for exchange purposes or perhaps as status symbols (Sherratt in Cunliffe, B (ed.) 1994, p170). Alongside such developments went the establishment of livestock rearing and crop husbandry specific to particular regions – the building up of sedentary economies based on a settled way of life. Together with this went the development of secondary products such as the inclusion of milk in the diet of cattle-rearing communities (Whittle 2003, pp83 and 163; Smith and Brickley 2009, p118). In addition, however, the interaction of communities with similar groups was becoming increasingly important.

With such diversity of resources and variety of life-styles throughout the Continent, broad generalisations are avoided in archaeological interpretation, but evidence suggests two recognisable patterns related both to development with time and to influences of locality (Sherratt in Cunliffe, B (ed.) 1994, pp200-201). Where farming was on a small scale confined within the limits of group life restricted by traditions and territorial isolation, activity is seen to be centred on the achievement of subsistence in a site of permanent settlement where 'hearth and home' gave reality to human existence (Sherratt in Cunliffe, B (ed.) 1994, p172). But isolation was not total, for villages grew up, groups became inter-related and, through exchange, trade and social networks took shape, cementing the association of communities and, no doubt, giving rise to conflict (Sherratt in Cunliffe, B (ed.) 1994, p174). This was the pattern in the early part of the period [4500 – 3500 BC] and remained so in some regions throughout. Artefacts which characterised this period are however of great significance as indicators of the symbolic meaning of the material way of life that was emerging, for “This phase of European prehistory has left some of the most remarkable memorials to the efforts of the early farmers and their ideological struggles”. (Sherratt in Cunliffe, B (ed.) 1994, p181). Monumental constructions, ranging from earthen mounds containing single graves or stone built tombs to burial chambers approached by passages supported by massive wall-slabs (Sherratt in Cunliffe, B (ed.) 1994, pp172-180), are felt to represent not only the sanctity of life and death, but also of power and rights for those for whom they were the focus for celebration and ritual gatherings (Sherratt in Cunliffe, B (ed.) 1994, pp181-1878). Smaller artefacts, such as simple elaborate vessels,

personal ornaments of stone, shell and fine metal and tools and weapons of traditional styles are seen to bear an additional symbolism when revealed as grave goods associated with particular buried individuals or collectively as ancestors. Decorative images and figurines suggest a symbolism of a personal nature – the ideology of an individual person.

A different pattern, however, is recognised in relation to settlement on a broader scale where successive generations had been able to exploit greater stretches of landscape and create a wider network of social interaction (Sherratt in Cunliffe, B (ed.) 1994, p201). Emerging later [3500 – 2500 BC] and in particular regions rather than generally, the pattern was of human reaction to changing circumstances and a 'facing up to' new needs through innovation and fresh technology. The advancing metallurgical techniques for "alloying and casting copper ... for extracting silver from lead or working marble using emery" (Sherratt in Cunliffe, B (ed.) 1994, p184) is typical of the means of improving inter-island travel for trade as well as the making of rich metal vessels and jewellery for exchange or mutual sharing in domestic and cultural advancement (Sherratt in Cunliffe, B (ed.) 1994, pp184-187). The presence of battleaxes, maceheads and knives in individual burials shows, too, a response to the realisation of the ever present threat of aggression and the action necessary being in the hands of individuals. Furthermore, there is evidence for distinguishing a 'shift of image' of control of society from the power of female mother goddess to the male with 'warrior values' (Sherratt in Cunliffe, B (ed.) 1994, p200). New ideals were taking shape through control, in all aspects of life, by the agency of human action involving leadership, organisation and the exercise of power; the ideology, it is suggested, being success both material and social (Sherratt in Cunliffe, B (ed.) 1994, p201).

In the next millennium, the early decades of the Bronze Age, in Europe, this pattern of human undertaking is seen to continue, changing only in "the nature of its social organisation" and "how this found material expression" (Sherratt in Cunliffe, B (ed.) 1994, p275). Novel ideas on the domestic scene flowed as readily as in social affairs and methods of defence but always with success, prestige and power as their end – the material culture both inspiring and being stimulated by human hopes and fears – ideologies reflected in individual lives and in the societies they created.

Summary

The picture this gives of the Neolithic period from its earliest post-Palaeolithic phases to the merging into the Copper and Bronze Ages, is thus one of change. This was clearly at a slow pace initially but resulted, over the millenia, in the means of livelihood and styles of life for *Homo sapiens* of the time, changing in radical and widely varying ways. Environmental conditions, permitting sedentism and settlement, stimulating a material culture seem therefore to be related to cognitive attributes and responsible for the developing culture. For human individuals, adaptation, it would seem, must have been the criterion of success – the adapting by virtue of the symbolic mind of their Palaeolithic ancestors, through the stages of the necessity of decision making, towards a new view of life altogether. Though difficult to prove, the individual person could well have found a deeper, richer and more profound awareness of 'self'. It is to find out whether cognitive archaeology can demonstrate the realisation of this, that Renfrew's ideas about the 'ancient mind' will be considered.

The Cognitive Archaeology of Renfrew's 'Ancient Mind'

At the heart of Renfrew's Cognitive Archaeology, and infiltrating every part of the extensive examination he gives to his concept of it, is the prehistoric human individual's way of thinking. The 'ancient mind' of Man and the material evidence for the reality of the concept is found in “the study of past ways of thought as inferred from material remains” (Renfrew and Zubrow 1994, p3). As a starting point for the elaborate discussions his work arouses, he is careful to state clearly what this does *not* mean: it is not a process of seeking to 'enter the mind' through empathy, thereby experiencing what it was to be “that other long-dead person” (Renfrew and Zubrow 1994, p3). Such a subjective view, in its idealism, lacks validity, being outside any field of scientific testability. For him, the aim is an objective one – the production of valid generalisations, examined through all available data (Renfrew and Zubrow 1994, p10). When applied to the cognitive sphere, the data provide the material evidence of human activity and the generalisations constitute the 'internalised cognitive map' built up by each individual through the personal experience of living within that material culture. In relation to each individual human, he goes further: “indeed I take the existence of such a *mappa* to be the cocomitant of the self-awareness and self-consciousness which we believe to be part of the shared human condition. It is a defining feature of self-consciousness that the self is separately identified and that 'I', 'thou', and

the world emerge as distinct entities." (Renfrew and Zubrow 1994, p10). But if this is so, how, where and when, in human prehistory did it begin to be apparent? Over the years, it is these problems that Renfrew has been 'figuring out' and in his book entitled *Figuring it Out* (2003) he offers some solutions.

In assembling archaeological information which, for him, gives credence to the picture emerging from Palaeolithic times to the Early Bronze Age, of the sapient human of the Cultural Explosion, Renfrew makes one assumption which is crucial. On the basis of current understanding, "humans today differ very little genetically from those humans who lived ... 40,000 years ago" - any differences being well within the range of modern humans throughout Europe: "we are pretty much the same"! (Renfrew 2003, pp12,13). In 'cognitive' terms then, the 'ancient mind' worked much the same as the mind of modern humans: to make use of present-day computer terminology, "the hardware ... is the same" (Renfrew 2003, p14). The attributes of the 'human revolution', speech and language, cave art and decorative imagery, symbolic expression of issues of social life, suggest that what defines a human individual - self-awareness - was then, as it is now, a reality. But if this represents what all human individuals have in common, what epitomises the 'software', the differences which distinguish one individual from another? Since the evidence for the first comes through artefacts from some 40,000 years ago, archaeologists look for indications of the second appearing since that time: it is variation in lifestyle and ideology that is needed as evidence. Whilst it might seem that with the hardware in place, "fully modern humans had arrived", the evidence is that for some 30,000 years they "did not change the world very quickly" (Renfrew 2003, p14). What Renfrew sets himself to figure out, then, is how to explain what is for him the *sapient paradox* - "why is it only in the past 10 millenia that we see strikingly new behaviour patterns – constructions, innovations, inventions – which are changing the world?" (Renfrew in Hodder (ed.) 2001, p128). In the terms by which biology has 'redefined' the human species, how can an explanation be found for the fact that "the new genotype producing the new phenotype *Homo sapiens sapiens* did not at once produce a new range of interesting behaviour patterns" (Renfrew in Hodder (ed.) 2001, p128)? Seeking as he does, as a cognitive archaeologist, to find a place in human pre-history for the 'emergence of mind', Renfrew puts forward the suggestion that this process which "while it may have begun ... with the emergence of our species, has in fact to be regarded as a ... gradual one, operating in several phases and stages and perhaps independently in different parts of the world." (Renfrew in Hodder (ed.) 2001,

p95). Endeavouring to fit this into a recognised classification of periods of cultural development, he outlines Merlin Donald's system of Cognitive Phases, where the Episodic Culture of *Australopithecus*, and *Homo erectus*' Mimetic Culture are followed by two *Homo sapiens* phases, the Mythic associated with the Upper Palaeolithic hunter-gatherers and the Theoretic, coming later with the development of writing in the Early Bronze Age. For Renfrew this leaves out "the most crucial step of all" (Renfrew 2003, p115) – what he calls the Material-symbolic phase. Furthermore, within this phase he distinguishes two episodes, each of which has a bearing of utmost importance to the emergence of the human mind prior to the development of writing (Renfrew in Hodder (ed.) 2001, p127).

The key to the significance of the material-symbolic for archaeology is the evidence for a series of new relationships which humans developed with the material world. "It was then that they built houses, fashioned images of deities and constructed shrines. ... They developed new techniques ... invented valuables ... defined commodities ... [and] established the basis of trade and economy." (Renfrew 2003, p115). As a process it took time but it is seen to have progressed from the time when circumstances were to lead human groups to frequent certain areas just occasionally, perhaps regularly and then permanently, there to make use of their resources in their own particular ways – sedentism, accompanied by a material culture. This culture both stimulated and enhanced their 'symbolic' way of thinking, creating and idealising - "humans became more interactively involved with the material substance of the world ... in a range of new ways, using a wider range of materials", so that when materials "took on ... symbolic power, the process of engagement became a powerful driving force for social and economic change." (Renfrew in Hodder (ed.) 2001, p127). But the trigger for this new 'materialisation' seems, to Renfrew, to have been sedentism (Renfrew in Runciman (ed.) 2001, p96).

It is in the light of these concepts that Renfrew distinguishes the two episodes within the symbolic material phase. The first was the development of sedentary society which allowed a varied relationship to develop with the material world based on the ascribing of symbolic meaning to objects. In the second, emerging from the first, materials came to be representative of wealth, prestige and power (Renfrew in Hodder (ed.) 2001, p131). Associating sedentism with the artefacts which are the evidence for the techniques they employed in practical ways – ovens for cooking, pottery vessels for storage, fine metals for adornment, monuments for religious beliefs (Renfrew in Runciman (ed.) 2001, p102) – it is

through interpretation of such practices that a particular type of society is recognised. Typical of Neolithic times, it is recognised by archaeologists as 'egalitarian'. By this term, the sense that societies were 'group-oriented' (Renfrew in Runciman (ed.) 2001, pp103-4) is expressed; not only must there have been co-operation in the labour of constructional work – of monuments in particular – but burial arrangement and grave goods give very little trace of the individuals involved (Renfrew in Runciman (ed.) 2001, p103). It was group endeavour rather than individual achievement that is reflected in what has remained of their settlements over subsequent millenia. Citing the large farming community dating back to 6,500 B.C. revealed by excavations at Çatalhöyük Renfrew paints a vivid picture of the sort of life the inhabitants lived – crop growing and cattle rearing together with revering their dead ancestors and effigies of deities – material culture determining symbolic relationships both practical and ideological (Renfrew 2003, pp138-139). In recent years, the interpretation of the symbolic nature of the culture of Çatalhöyük, has opened up discussion on whether such practices might be considered as religious (Hodder 2010, pp1-28).

It is only from Late Neolithic to Early Bronze Age that a significantly different society seems to have emerged, where individual status began to be recognised. Whilst it is largely through burial data – exotic grave goods, for example, accompanying a burial, indicating a higher-status individual, prestigious and prominent in a social group (Renfrew in Hodder (ed.) 2001, p136) – that this concept arises; underlying it is the notion of an advancement of the engagement by individuals, in a society, with the material world – the notion of commodity (Renfrew in Runciman (ed.) 2001, p107). Commodity, as a concept of the reality of the constituents of the material world, is central to the symbolic concepts of value, measure and exchange, all of which are inter-related. Once institutions became engaged with commodities [both natural and manufactured] they took on the significance of value, which is judged by measure and thereby of use for exchange – symbolic concepts, originating in the mind, depending, cognitively, upon the real material commodity. But in addition to this practical expression of symbolism, burials and monuments are seen to indicate meaning of a more reflective nature – ritual, ceremony or religion: not there for practical purposes, but something that symbolised belief. Thus, in all ways, “Human development comes about through increasing engagement with the material world, mediated by institutional facts.” The development of notions of value, measurement and exchange are “important components of mind” (Renfrew in Runciman (ed.) 2001, p107).

Renfrew sees this as clearly illustrated by the concept of property as an institutional fact; together with ownership, and favoured by sedentism (Renfrew in Runciman (ed.) 2001, pp101,114), the concept indicates the lines along which human engagement with the material world has progressed (Renfrew in Runciman (ed.) 2001, pp114-115) – something which develops with the human story, rather than "emerging full-grown with the formation of our species" (Runciman 2001, p107).

For Cognitive Archaeology, however, it is the place and the role of the individual, in whose mind these concepts have formed, that is of prime concern. Even though the assumption is made that there is little physical difference between ourselves and our sapient ancestors of 40,000 years ago, the obligation remains of considering the minds of those ancestors (Renfrew and Zubrow 1994, p5). It may be assumed that ways of thinking then were different from our own, but the preserved material culture can provide, for archaeologists, a framework of inferences through which a concept may be gained of the way in which cognitive processes operated in specific contexts and thus "to investigate the inter-relationship between those processes and the social contexts which harboured and promoted them"(Renfrew and Zubrow 1994, p5). Since the focus for such inter-relationships is human behaviour, the ability to construct and use symbols has been the key to the interpretation of meaning associated with particular observations – the means of conceiving the reality of the past "with human individuals living their lives and interacting with each other and with the environment" (Renfrew and Zubrow 1994, p10). Such a reality, however, has to be recognised as the construction through material culture of a society of individuals each possessing a cognitive map, the *mappa* by which personal awareness of 'I' brings an individual response to 'thou' and to the 'external world' (Renfrew and Zubrow 1994, p10). It is by the study of "preserved aspects of past material culture" and of "the activities of early societies", that valid inferences may be made about the 'cognitive maps' of human individuals of past times (Renfrew and Zubrow 1994, p11). It is here that there emerges the concept of the uniqueness of each human individual – the awareness of 'I' as the 'self', 'myself' as distinct from other selves.

Looking then for explanations for his *sapient paradox,* Renfrew follows human individuality – the awareness of self – from the hunter-gathering lifestyle of the Upper Palaeolithic where symbolic thought was clearly expressed but not much acted upon, to the symbolic material cultures of Neolithic to Bronze Age, where activity led to the formation of society,

with individuals having an identity and a role. Societies then can be seen as having the capacity to 'individualise'. From early sedentary ways of life there arose, through material culture of group oriented societies where “there is no evidence of salient ranking”, individuals seeming to have no personal importance (Renfrew in Runciman (ed.) 2001, p103) – 'egalitarian' in every way. With the advancing technology of later material culture, where ownership symbolised possessions and property, individuals became identified through wealth, prestige and power – having an awareness of self as an individual with status within a social setting, resulting from human individuals in a material world “constructing their own social realities” (Hodder 2001, p138). It can be seen here that human uniqueness is reflected in the selfconsciousness of each individual, within a complex society.

Discussion of the approach of cognitive archaeology

In assessing the value of Renfrew's search for the origins and development of the mind of modern human beings, through prehistoric archaeology, his concepts have to be seen, in the first place, against the background of widely varying views within the discipline in the last decades of the twentieth century. In his intention to arrive at some sort of solution to the 'sapient paradox' “in as scientific and objective manner as possible” (Renfrew in Renfrew, C. and Scarre, C. (eds.) 1998, p2), Renfrew established his outlook as quite distinctly separate from those derived not only from speculative non-evidence based archaeology, but also from the subjective enquiry into the mind of the 'long-dead person' (Renfrew in Renfrew, C. and Scarre, C. (eds.) 1998, p3), where the only means of access was through the artefacts that had been left behind. His own studies, being part of the New Archaeology, adhering to the processual concept in general, and to cognitive processual in particular, are, however open to debate in the twenty-first century, both in the field of archaeology and in the realms of other disciplines with a shared interest in human individuals and the societies they have formed through the innovation of culture – from evolutionary science to social history and from social aspects of science to the materialistic philosophy of 'self'.

An archaeologist whose views are of particular relevance is the author of the book about Çatalhöyük – *The Leopard's Tale* - Ian Hodder. Having been an academic colleague of

Renfrew in Cambridge and also being engaged in the archaeological work, as he was, of Çatalhöyük, they shared a common interest in resolving through debate, differences concerning the interaction of humans and the material world. In Hodder's view "some may argue that humans depend on material culture generally", whilst "others assert that the relationship with material culture has to be understood in terms of the very construction of self and being" (Hodder 2001, p9). Whilst acknowledging, with Renfrew, the central role of material culture in processual archaeology, his own view changed in the light of new experiences in the field and challenges arising from the outlook of others. Having encountered the New Archaeology in the 1960s, by the early 1970s he was having doubts about its basic principles such as were expressed by the processualist's – that hypothesis testing was "the only valid method of interpreting the archaeological record" (Balter 2005, p75). It was his view that the processualists made their biggest mistake in "failing to appreciate the complexity and richness of human culture": the artefacts of material culture, having been active elements in the symbolic world of ancient peoples, showed that "they play an active part in performing and giving meaning to social behaviour" (Balter 2005, p76). This post-processual archaeology was not anti-science but rather an attempt to be critical of 'assumptions' and 'theories' and yet sensitive in interpreting data (Balter 2005, p81). In common with others and in agreement with Renfrew, Hodder assumed that sedentism had preceded the emergence of agriculture and, with sedentism 'the house' became the focus and symbol of social activity. Furthermore, in his view, burial sites being associated with the homes that had been lived in, brought 'death' into the symbolic significance of the reality of life as it was being experienced (Balter 2005, pp181-183).

The idea of relating evolutionary theories, derived from biology, to the evolution of culture and extending it into social evolution as put forward by W.G. Runciman, throws further light on the significance of Renfrew's concept of the 'ancient mind'. Basing his ideas on "the behavioural-patterns of human beings between the Upper Palaeolithic and Neolithic Revolutions", it is the co-operative relationship extending beyond kinship which can be inferred from the evidence of the archaeological record, that Runciman recognises as changes from "nature to culture and culture to society" in the evolutionary terms of heredity and selection (Runciman 2001, p235). Behaviour-patterns are thus observed as first of all emerging from 'hereditary' transmission from mind to mind by teaching and imitation, subject to and sustained by cultural selection in the Upper Palaeolithic era and then as becoming formalised through the institutional rules of societies as they developed

in Neolithic times (Runciman 2001, p236). The resulting relationship between individuals is seen to have changed from a hunter-gatherer co-operative one, through negotiation with those who shared the same natural world, to one where inducement and sanctions, through the rules of society, gave individuals particular social roles - “no longer interpersonal only” (Runciman 2001, p237). Seeing these changes as transitions rather than revolutions, Runciman raises the question of how each, whilst retaining a stability over time, could lead from one to the other. In his view behaviour-patterns of the technically skilled groups in the Upper Palaeolithic could have been not only stable over successive generations but quite complex and variable “without there being any formally defined ... economic, ideological or political roles” (Runciman 2001, p242). To bring about a transition, then, to an institutional human world, may perhaps have required only a minimal extra accumulation of resources and differentiation of functions. But in addition, individuals would have had to take on particular roles, becoming agents independently of their own personal characteristics. An evolutionary threshold had then to be crossed whereby information-transfer by imitation and learning was superseded by the encoding of formal rules. This threshold, in Runciman's view, as for Renfrew, had been crossed only through “sedentism, group size and storage of resources” which formed and sustained the institutions which depended for maintenance and stability on “obedience to rules” - the transition from 'acquired' to 'imposed' social behaviour (Runciman 2001, p250).

It is the role of institutions in the context of the social reality of what has emerged as the collective lifestyle of humans which interests John Searle. In his attempt to develop a 'theory of mind' he sees the need to first relate biology to culture and then culture to institutional society. He paints a picture of reality derived from two theories of natural science – the Big Bang theory of the universe and the evolutionary theory of biology (Searle 1995, p6). Elementary particles are organised into systems; some systems constitute living organisms; an organism develops a nervous system from which emerges consciousness and then in humans, a higher-level of consciousness – the capacity to represent objects and states of affairs in the world as something beyond itself: such meaning or symbolism underlies, in his view all “forms of institutional reality” (Searle 1995, p228). He thus depicts, as does Runciman, culture being constructed out of nature (Searle 1995, p9), the step from 'culture' to 'institution' coming from the extension of the mind at a higher-level from which comes symbolic thought. Rather as Runciman gives particular roles to individuals in the formation of institutional societies, Searle represents material objects and

states of affairs as having roles according to the 'status' given them by nature [intrinsic], culture [intention-related] or institutionalism [collective intentionality] (Searle 1995, p39-41). Searle's view is that of a philosopher, but the continuity from non-symbolic thought to collective intentionality, which his thesis illustrates, has much in common with Runciman's social history and Renfrew's cognitive archaeology.

It is archaeologist Steven Mithen who takes up the concept of material cultures in symbolic association with religious ideologies emerging with the Upper Palaeolithic. As he sees it "any adequate understanding of past societies must encompass reference to their religious ideologies" (Mithen in Hodder, I. (ed.) 2001, p108). But, from an evolutionary perspective it is hard for archaeologists to detect any evidence for beliefs – such as in 'life after death' – unless the significance of material culture is recognised as contributory to 'mental modularity': in that context he sees 'cognitive domains' of the human mind relating to the understanding of "other humans, other species and material objects", being significant through the real entities of the world, in religious ideologies (Mithen in Hodder, I. (ed.) 2001, p109). Furthermore, the artefacts of human culture are not mere mirror images of the mind but agents for "reformulating ideas, allowing them to be recreated within the mind-brain": material culture, he suggests, is the key to the extension of the mind beyond that provided by the 'evolved brain' (Mithen in Carruthers, P. and Chamberlain A. (eds.) 2000, p215).

In a more recently published book, edited by Ian Hodder (2010), and having the intention of investigating the link of Neolithic culture with religion, a variety of views from theologians, in discussion with anthropologists and archaeologists, are put forward and considered as providing "a new perspective on religion and its origins" (Hodder 2010, p27). With the key themes of the integration of the spiritual with the material, the role of belief and its cognitive foundation, the capacity for religion is seen as a natural component of complex systems possessed by humans. However, it is suggested that this capacity may have, 'accidentally', been a cause rather than a result of sedentism: it is now argued, by some, that people started agglomerating and creating settled life for religious reasons (Hodder 2010, p18). Furthermore, sedentism, in association with the dominance of humans over wild animals, thereby enabling agriculture to develop through their domestication, suggests, to some, a new concept of human agency - an awareness of the dominance of the human individual in emerging society, with implications also regarding

the individual 'self' (Le Ron Shults in Hodder 2010, p80). It may be said that becoming aware of one's self as agent “is mediated through one's entangled relations with those who are not-self”, so that “Attention to identity and attention to others, emerge together” (Le Ron Shults in Hodder 2010, p94). There is, unravelling here, a picture of how, in Neolithic times, humanness may have emerged as the unique individual human being took shape. Nevertheless, though both biological evolution and the genesis of religion may be seen as factors in this emergence, they cannot, alone, provide an adequate explanation for the emergence of the *unique* 'self '. This remains the province of philosophy and the concern, in particular, of philosophical theology, as has been discussed in Macquarrie's *In Search of Humanity*. However, the question of whether grounds have been provided for the claim for possible integration remains to be answered.

CHAPTER XI: INTEGRATION

As the authors of *God, Humanity and the Cosmos* have observed, there is, at the present time, a meeting between the sciences and religion through 'conversation', but for this to continue in the future, there has to be interaction. The view put forward for the nature of such interaction is that of sharing in the advancement of each on issues, human and divine, amounting to integration (Southgate et al 1999, pp591-97). In taking up this theme, the thesis has aimed to throw light on how, through searching more widely by way of associated disciplines, centring throughout on the uniqueness of the human individual, integration may be achieved.

The possibility of an integration of science with theology, through a twenty-first century view of human uniqueness, discussed in relation to concepts of the human individual put forward by the associated disciplines of cognitive archaeology and philosophical theology

Whilst the appropriateness of Renfrew's *Ancient Mind* and Macquarries's *In Search of Humanity* in following the concept of the uniqueness of the human individual, in twenty-first century molecular biology and theological interpretation, has been reasoned and developed, the issue of their relevance to the promotion of any kind of integration through the two associated disciplines of philosophy and archaeology, remains. In Polkinghorne's terms this would mean establishing more than a 'fitting together' or consonance, yet less than 'the one becoming surrendered to the other' or absorption, if assimilation or integration were to be achieved (Polkinghorne 1998, pp22,117,118). The question arising then is, can the study of the ancient mind by the archaeologist become to any degree integrated with the theological philosopher's analysis of the mind of the individual self? An answer will be sought by bringing out from the two 'sides' as they have been presented, what they share by way of common ground and what each could contribute to the other.

However, what should be queried initially is, whether or not those who support the two disciplines so represented, have the intention or the wish, or possibly the vision of, 'integration': whether there has been an openness and inquiry into the particular facets of the shared topic: whether there is an apparent search for areas of collaboration. Certainly Renfrew's firm stand [though differing from others]on the objective role of the archaeologist in interpreting material evidence of self awareness, takes into account the subjective concept of philosophy, recognising its value in going beyond the remit of his

own discipline. Macquarrie, in a similar manner, establishes in no uncertain manner, the need to draw on the knowledge of biology and the origins of humanity at every turn.

With this shared intention, then, the common ground can be viewed from various angles – areas where there is a clear agreement, where there is a similarity of interest but also where one can add to the value of the other's concept, aspects covered only by one discipline, enhancing the knowledge of the other. One aspect stands out at the start of each study as clearly showing agreement - the close connection between one human individual and another. For cognitive archaeology, the progress of Upper Palaeolithic hunter-gatherers towards a sedentary Neolithic way of life indicates that, through a change in lifestyle, the individual human could become a more social being with more awareness of a personal identity. Philosophical theology, reviewing the present-day situation, sees the individual as being unable to exist in isolation, 'needing' others through the nature of the self being, as suggested by Macquarrie, determined by 'two poles', both the individual and the social. Associated with the social life that emerged in prehistory, was the observation that property and the concept of ownership influenced the growing realisation of identity through something being 'mine'. This is very close to the philosopher's view of 'having' as representing the individual's relation to material things and providing the element of choice for that person, a building up of personal individuality. For both disciplines though, the 'downside' of the acquisitive inclination that follows ownership is emphasised. For Late Neolithic people, ownership led to exchange and then wealth, status and power, with anti-social implications. For present-day humans, egoity through 'having' may be seen to give way to egoism, greed, the exploitation of resources and the exercise of power in the achievement of what is desired. A third shared concern is, clearly, that of death. The fact of death, for the philosopher is something that has to be faced by each human individual, both in relation to his or herself, and in regard to others. It is the evidence provided by burials and monuments that, for the prehistorian, indicates an awareness of death of a deeper and more profound significance, as the Neolithic culture progressed.

These selected aspects, however, though drawing the two disciplines away from 'conflict' and within the field of 'dialogue', do not of themselves suggest 'integration', for each retains its own independent concept and shows no convincing interrelationship. For grounds to justify any real integration, the studies must be probed for evidence to establish

what support or change of view the one can give to, and receive from, the other - what difference the one can make to the achievement of the search by the other.

To this end, cognitive archaeology's concepts will be reviewed first, to ascertain what answers philosophical theology might give to the queries that remain unanswered by prehistoric evidence. From there, the philosophical stance will be searched for areas where speculation is advanced without recourse to the findings of recent decades, that archaeology can provide.

In his introductory chapter to the *Ancient Mind*, Renfrew is clear that the 'focus' of the subsequent chapters was "the urgent task of developing ways of forming structures of inference ... which will allow us to understand better how people used their minds and formulated and utilised useful concepts in early societies" (Renfrew and Zubrow (eds.) 1994, p5) – this task being, in his view, undertaken by cognitive archaeology. Crucial to this, he says, should be the interpretation of archaeological evidence in terms of human 'behaviour'. Since all human behaviour is symbolic – in fact "symbolic behaviour is human behaviour" - it is the study of symbols as the human way of coping with all aspects of existence, from the senses of purpose, planning and measurement, to social relations and the supernatural that the cognitive archaeologist has to engage in (Renfrew and Zubrow (eds.) 1994, pp7-8). It is here that Renfrew has introduced the notion of the 'internalized cognitive map' – a way of representing self-awareness and the consciousness of the self as having a separate identity, acquired by personal experience and the gaining of knowledge of the external world. This suggestion, he says, "corresponds with my own personal experience and I make what seems a necessary assumption that this does not differ radically from that of other humans" (Renfrew and Zubrow (eds.) 1994, p10). This view is endorsed by his assumption that, in cognitive terms, the ancient mind worked much the same as the mind of modern humans (Renfrew 2003, pp12,13). Furthermore it is his view that the discipline of cognitive archaeology is "the logical and natural development and extension into the symbol-using fields of thought and of communication" (Renfrew and Zubrow (eds.) 1994, p10). Verging very much on the territory of philosophy, there is here an implication of the value of the interpretation of 'meaning' through experience employed by the philosopher. He brought out the importance of the role of symbols, most particularly by the observations on beliefs and religion, which he elaborated in the chapter on the archaeology of religion [chapter 6 of the *Ancient Mind*] - "the role of symbols in

coping with the unknown and with the supernatural" is, for him, of real significance (Renfrew and Zubrow (eds.) 1994, p47). Beliefs, which form the framework of religion, being part of the 'general philosophical beliefs' about the world, must in Renfrew's view, "relate to forces which are not merely those of the everyday material world, but which go beyond it and transcend it" (Renfrew and Zubrow (eds.) 1994, p48). Central to the notion of religion is that of personal experience for the individual and, though difficult to demonstrate, it is plausible as a motivation for symbolic monuments. Considering in detail the relationship of religious experience with ritual and iconography, he shows it also in the context of social and ecological processes (Renfrew and Zubrow (eds.) 1994, pp48-50). For some archaeologists religion is held to be simply a device for 'promoting efficiency' for society in the context of evolutionary progress, but for Renfrew the religious system of an early society can no longer be considered as only "a secondary factor in the explanation of cultural change" (Renfrew and Zubrow (eds.) 1994, p50). If this is accepted, then cognitive archaeology must take into account the concept of 'human transcendence' and for this must look, for significance and meaning, to the discipline in whose province it lies – philosophical theology.

For cognitive archaeologists, it is artefacts which provide the evidence on which their theories are based, and for Renfrew, of particular importance are the megaliths of Western Europe. In discussing their 'meaning' for him, he has indicated that the archaeological significance is firstly that "they represent *a serious, coherent, indeed patterned activity*" and then that, they provide, though perhaps indirectly, an "insight into the content of their [the builders'] beliefs" (Renfrew and Zubrow (eds.) 1994, p9). Whilst patterned activity may be taken as human behaviour which is "symbolic behaviour" - the special human ability of using a sign to represent an idea (Renfrew and Zubrow (eds.) 1994, p5) - beliefs, "must relate to forces which are not merely those of the everyday material world but which go beyond it and transcend it" (Renfrew and Zubrow (eds.) 1994, p48). In this, he shows the relevance of religion and supernatural beliefs to human behaviour. Much understanding of the ancient mind, then, depends upon symbolism and belief, as instigating elements for human behaviour, thus drawing, once again, on philosophical theology.

Philosophers vary in their association of symbolism with human activity, but Macquarrie shows the relationship through those aspects of the human person expressed in the variety

of forms of art. By considering music, poetry and visual art in this context, he throws light on how, as emerging in the development of an individual self to a person, this may be seen as a reflection of ancestral stages of development. Not only does he point to the creative energy going beyond what he terms 'utilitarian' [being not related to survival or physical well-being], but being depicted as 'forms of play', an ingredient which is necessary for the formulation of human nature. Taking art at the deeper level of the self, he recognises within its variety, a mode of transcendence. In relation less to self and more to society, he points to human behaviour in terms of commitment arising from awareness of the 'summons of conscience' and seeing there a self-transcendence, a 'going beyond' of normal egoism.

Projecting this philosophy into the field of the material, Macquarrie gives importance to the concept of ownership of things – having something that is 'mine' – through the freedom to be 'oneself', as a 'transcending of the body'. He, in fact, goes so far as to trace it back to 'our ancestors', enabling them “to emerge from savagery to a tolerable human existence thousands of years ago” (Macquarrie 1982, p73). Since to him, this freedom is “essential to the human adventure” (Macquarrie 1982, p21), he is clearly showing the relevance of archaeology to his philosophy and, indeed, drawing upon it though only to a limited degree.

Regarding 'belief', Macquarrie's distinction between 'belief in' and 'belief that' does, in its expansion of each, give expression to Renfrew's taking into account not only the belief in the material world but also in what seems to go beyond and transcend it. Endorsement, too, comes from the notion of human reason having a “natural tendency to transgress its limits in search of an ideal” (Macquarrie 1982, p73). Renfrew's correlation of the beliefs of the ancient mind with evidence of religion in practical terms is in line also with Macquarrie's view that “religion has, for millenia, dominated all other human interests ... because it has deep roots in our human nature” (Macquarrie 1982, p73). Furthermore, for both Macquarrie and Renfrew, belief is closely associated with death and with hope. The modern mind may, then, reasonably be considered to reflect the ancient mind in, using Macquarrie's words, “having found that death is not entirely dark, negative and frustrating ... we can explore the possibility of hope beyond death” (Macquarrie 1982, p242).

Searching for the ways in which cognitive archaeology might be enlightened by the study of humanity by theological philosophy, has, as may have been expected, exposed areas

where the 'tables' need to be 'turned' and archaeology be seen to throw light on some of philosophy's assumptions.

Throughout his narrative Macquarrie traces a thread of development representing the transitions which humanity [both at the individual and the collective level] has, does and will go through, from cosmic to global existence, from non-living to living, from non-human to human – ever more dynamic and emerging not by some chance but through a total involvement with the universe (Macquarrie 1982, p6). Tracing this thread back through the Christian doctrine of man and ancient philosophies, he relates it, through science, to the individual human: “The emergence of personal life from the mere animal life which preceded it must be accounted just as great a leap in the evolutionary process as the much earlier emergence of the living from the non-living.” (Macquarrie 1982, p8). To the archaeologist, familiar with notions of great 'prehistoric' leaps, such a statement should not be allowed to stand unsupported by evidence. Whilst acknowledging that generations never start from scratch, but are, rather, “still working themselves out ... and determining ... what is possible now” (Macquarrie 1982, p18), he indicates that nothing more can be suggested about how and when these events actually came about. Many of his chapters, as he says, are “rather heavily ethic in tone” (Macquarrie 1982, p187) and so he turns to art relating it in the first place to play and humour and then to language and music where origins are hard to establish. In discussing the visual arts, whether expressed in paintings or sculpture, architecture or symbolism (Macquarrie 1982, p197), he looks back no further than the artists' work in shaping, polishing and sculpting the materials prior to the building of a Greek temple and setting up “a world in which many other things are seen in their reality for the first time” (Macquarrie 1982, p194). Referring to Homer's artistic talent, in setting forth human nature in his epic of the Trojan War, he makes clear his view on the value of the writer's genius in turning a campaign into “an immortal exposition of human reality” (Macquarrie 1982, p195). How greatly would a study of the abundance of prehistoric artefacts advance this view! Evidence could be provided, in abundance, from cave paintings to beautifully designed pottery, from necklaces to ornate grave goods and complex arrangements of settlements to megaliths and henges.

Though coming only towards the end of his book and relating particularly to death and to hope, Macquarrie's 'evidence' of the 'mute testimony' the oldest of the human race has left for present-day philosophy, is worthy of a further reflection –

> in prehistoric times ... there is unwritten evidence to show that these distant ancestors of ours were thinking about death; ... the bodies of the dead were buried with greatest care and [with] implements and ornaments that they might have used in life. (Macquarrie 1982, p249).

The comment it provokes, in this context, is that it is but *one* of the many mute testimonies cognitive archaeology could provide, if asked to.

By correlating the views taken from the two associated disciplines, as here presented, a new perspective can be recognised. Rather than having to close an inevitable 'gap' between the theology and the science of human existence, the associated disciplines reveal an inherent integration: an integration, acknowledged by each, through the particular virtue unique to humanity – that of human transcendence. For each this 'key' to being human highlights the dependence for 'going on living', on one common factor, hope – the inherent instigator of a complex and sophisticated way of life, unique to each human individual. The claim being made by the thesis, however, bears no implication that this represents the *only* way in which a union of the disciplines can be visualised: it is presented as *one route* by which it may be achieved. It is considered, however, to be a plausible one for what may be anticipated for an integrated relationship of theology with science in the twenty-first century.

Whilst the need for integration suggested in *God, Humanity and the Cosmos* is in order to ensure that dialogue between science and religion continues, the thesis has aimed to give the importance of integration a more significant role than this. History has shown that integration will not come about by theology finding conclusions from empirical science, or by science adopting a theological role, both having been seen to enhance separation rather than aiding union. The historical background to the conflict between the disciplines has shown how prejudice, stemming from ignorance, impeded the progress of the Church's response to contemporary need for change. Current antagonism between Christians and supporters of biologist Dawkins may be seen as a further instance of prejudice arising from ignorance – the lack of understanding of theological issues promoting the growth of false notions of meaning and purpose about the natural world. The integration visualised in the thesis has involved a concept of sharing, to the extent of each discipline recognising its need for the advancing knowledge of the other. For those who find compatibility totally acceptable, there is an urgency about the aim of a 'coming together' of the disciplines, for without it, there is no assurance of the advancement of the one, penetrating, influencing

and confronting the other. But if, as the thesis proposes, the way forward is through the concepts of associated disciplines, on the common ground of the uniqueness of the human individual, then the means for achieving that aim is integration.

What has been put forward, then, represents a set of valid reasons for the associated disciplines of philosophical theology and cognitive archaeology, with the unique human individual as common ground, to engage in more than dialogue and enable integration to replace both conflict and separation between Christian theology and biological science.

CHAPTER XII: CONCLUSION

Whilst the previous chapter has set out and evaluated the project's proposed means of achieving integration between science and theology, the conclusion views the value of the thesis on a wider scale. Taken into account are the relevance of the historic past, the impact of present-day advancement in science and archaeology on the one hand with theology and theological philosophy on the other, and the bearing of the substance of the thesis on the speculations being advanced regarding the future.

The role of the Historical Background and the significance of the change in attitude through the twentieth century

By pursuing the progress of scientific thought and relating it to contemporary views of Protestant Christian doctrine, ideas of the causes and results of the challenge the Church's authority was experiencing from advancements in biological knowledge, through the seventeenth to the twentieth century, have been considered. Human uniqueness, though assumed throughout by both science and theology, was seen to be defined differently by each – the scientific view of the perfectibility of the human self contrasting radically with the Christian traditional belief in the imperfectness of the human soul. In presenting both Moderate and Extreme attitudes through the centuries, I have made clear that the 'moderate' trend continued through acceptance and adjustment, whilst the extreme views both scientific and theological strengthened as time went on and became the source of the fierce confrontation between the disciplines. As the traditional idea of philosophy as a resource for illuminating the theology of humanity through science steadily diminished, the emerging ideas of archaeology as a resource for revealing the nature of humans to science are shown to have gradually developed. It is the role of these disciplines associated with theology and science, that I have given prominence to, throughout the thesis, as potential sources for integrating science and theology through twenty-first century concepts of human uniqueness.

The realisation of common ground for interdisciplinary debate, such as the concept of chance and necessity emerging from biological science, I have shown to open up paths of philosophical discovery, scientific and theological, about the role of human beings in the wider realms of each discipline. At the same time, the advancement of prehistoric

archaeology, illuminating the nature of human uniqueness through the comparison of modern humans with extinct hominins, was of value since, heretofore, comparisons had been limited and so impeded by having reference to only extant and remotely related primate species. I have shown that through the twentieth and twenty-first centuries archaeological knowledge of the development of the nature of human beings moved beyond that provided by biology, so that comparisons of a more realistic nature could be explored.

The relevance of early twenty-first century advancements in human biology, prehistoric archaeology and a furthering of theological interpretation regarding human individuality

The impact of molecular science on the widening of the field of conventional genetics and epigenetic understanding, has been shown to give, through The Human Genome Project in particular, a need for considering the human species as being composed of human individuals – a transformed outlook on the concept. I presented the compatibility of theological and scientific concepts associated with the emergent theologian-scientist school of thought as a pointer toward the recognition of the value of viewing the Christian belief in the revelation, through the human Jesus, of a Christ-like God – a concept of 'humanness' in the divine nature. Though equally strong in the depiction of humans as individual human beings, the theological and scientific disciplines were seen to acknowledge that the establishment of individual *uniqueness* was beyond their recognised remit, in a way that the uniqueness of species had not, being within the province of associated disciplines. Where formerly there had been agreement about the uniqueness of the human species amongst other animal species, an analysis of what made them unique – the nature of humans – has been shown to indicate where differences between individuals lay, rather than by what was shared: where human uniqueness had been assumed for the species, the uniqueness of the human individual had not been investigated. I have shown how a reinterpretation of uniqueness in reference to human beings has brought to light the value of the concepts of associated disciplines in setting aside a cause of conflict of long standing between science and theology. I have given emphasis, in this context, to the value of prehistoric archaeology in opening up a field of enquiry, not previously explored.

The prospects for a furthering of coordination in the twenty-first century between science and theology

By extending the remit of human biological science through the specialist discipline of

cognitive archaeology, I have shown how aspects of thought and behaviour evolving through recent millenia, reached by systematic deduction from the variety of artefacts, have illuminated the present-day view of the human 'self'. Discussion through philosophical theology, of the concept of the human individual beyond the doctrinal limits, has given both depth and reality to the meaning of the 'human soul'. Through these two associated disciplines, united by the common ground of the human person, I have shown the possibility of a stronger association by each supplementing the other – a bond of integration.

The hope for the relevance of a new concept of human uniqueness for both science and theology, to the speculation of the fate of humanity in the future

The recent views of three scientists who find their work entirely compatible with Christian theology – though independent as conceived by their academic discipline – have been selected for reflection on the future of mankind

1. Palaeobiologist Simon Conway Morris' recent book *Life's Solution*, published in 2003, with its subtitle *Inevitable Humans in a Lonely Universe*, reflects the relevance of Monod's *Chance and Necessity* to the thesis, sharing the notion of the solitary position for humankind in all that exists through chance, whilst finding the significance of necessity in a twenty-first century view of the universe. The theme of his book is based on the importance he attaches to *convergence* observed in his studies of the recurrence of particular features over geological time, in extant species of a variety of widely separated phyla, where their probability is, apparently, slender. This, to him, seems to indicate an inevitability in the indeterminate manner of occurrence and to be contrary to the notion of pure chance as the determinant of the human species. Through acknowledging the chance element through the human exercise of choice through freedom, he recognises this as the basis of the clearly observed variability both between the species of a genus and within a species, as is apparent in *Homo sapiens.* This leads him to reflect on the possibility of any certainty of human uniqueness being undermined by twenty-first century understanding of other planets, both in our galaxy and in the multitude of other galaxies. So much, in his view, depends upon there being the *right conditions* for the evolution of humanoids just like *Homo sapiens* elsewhere in the Universe – or can it be that Planet Earth is unique? (Conway Morris 2003, p234). Here twenty-first century enlightenment may throw light on the twentieth century anthropic principle (Conway Morris 2003, p237) which centres on

the idea that the conditions on Earth have been entirely suitable for life and the emergence of human sentience through its being 'biologically fit' for this purpose. Whilst modern physics and cosmology may indicate the relevance of 'hyperspace' conditions on other planets, where even the slightest degree of difference would be significant, in Conway Morris' view, modern biology and palaeontology show “an uncanny ability of evolution to navigate the appropriate solution” (Conway Morris 2003, p237). Herein lies, for him, a mystery enhanced by what is “equally germane and even more mysterious”, the arising of sentience – the mystery of how “the product of ultimately inanimate processes can come to understand both itself, its world and ... its strange sense of purpose” (Conway Morris 2003, p237). With this sense of purpose emerging from scientific philosophy, it seems to him that it is reasonable to associate apparent scientific mysteries with theological claims concerning Creation and consider the value of reunifying the scientific view with religious instinct. Whilst much of the discussion on this issue in recent years has been tentative and difficult he feels that “it is more than worth the effort” and that such a reunification “will be our lifeline” (Conway Morris 2003, p328). It is to be hoped that the ideas put forward in the thesis may be offered as a relevant 'worthwhile effort'. Certainly, reunification of scientific and religious thought has been its purpose, whilst aiming to establish something further than in past centuries – a bond of integration. Sharing the common ground of an understanding of human uniqueness through the biological emergence of prehistoric hominins, the thesis has extended the concept through recent archaeological knowledge. Through artefacts associated with Neolithic sedentism, interpreted by cognitive archaeology, a view is presented of the emergence through the society of the group to the independence of the individual, of the awareness of the person that is 'I, myself', as distinct from the otherness of 'you'. In so doing it adds to the mysteries of *life's solution* by way of the aspects of human cognitive ability which may be determined through the evidence of artefacts. Furthermore by searching for uniqueness in the human individual, the unfathomable consciousness of both self and soul, conceived as beyond both scientific and theological understanding, has presented yet another mystery for both science and theology.

2. In *Rebuilding the Matrix – Science and Faith in the 21st Century* published in 2001, biochemist Denis Alexander's aim is to provide an overview of the ways in which science and faith interact and to re-establish a theistic framework within which the humanizing of science may be revived and thrive in the twenty-first century. To this end, he examines the

ways in which science has been seen to challenge the human values of ethics, meaning and purpose of life and the uniqueness of mankind in the universe. Seeing God and nature as '*powerful allies*' (Alexander 2001, p461), he discusses the place of human beings in that holistic view through the notions that arose in relation to the twentieth century anthropic principle. Associating his ideas with the interpretation put forward as the 'weak' anthropic principle, he focuses on “those particular properties of the universe which have enabled life to evolve on our planet and so to be pondered on by conscious carbonaceous observers” (Alexander 2001, p410). He traces those 'particular properties' through from the Big Bang to the formation of the Milky Way and the planet Earth to the emergence of life and to the human species, at each stage through the agency of the “finely tuned physical and cosmological constraints” (Alexander 2001, p417). Like Conway Morris he considers, in this context, the relevance of the speculative premise of multi-universes in which there may somewhere be life with possibilities of conscious life. It follows from what is known about our own galaxy that “Things are arranged too amazingly just right for conscious life to emerge to believe it was merely a giant fluke”, and so, “multiple universe scenarios ... push the question back one step.” (Alexander 2001, p425). If not a fluke then, he argues, the finely tuned constraints and the presence of conscious beings are consistent with the notion of “a personal God who has intentions for the universe that he has brought into being and continues to sustain” (Alexander 2001, p425). As a scientist he is certain that science cannot answer all our questions, but to associate a personal God with what is observed is consistent with the emergence of conscious observers – that is to say with conscious human persons. In his hope of establishing a theistic framework for the interaction of science with religious faith, he has “tried to make a multidisciplinary overview of the subject” and to this end has utilised the resources of sociologists, historians of science, philosophers, scientists and theologians” (Alexander 2001, p8). The thesis, also following the need to explore the history of science, has utilised the resources of philosophers, scientists and theologians but, by contributing the findings of cognitive archaeology, may be considered to have added a further field of reference. Since the need to humanize science has been emphasised by Alexander, this could be seen to extend the range of relevant disciplines: by associating philosophical theology in a similar way as the thesis has done, it may be that the strength of the theistic framework could be enhanced. Furthermore, by the transferring of human uniqueness from species to individual, through both science and theology a compatibility between the intentions of a personal God with the fine tuning of the universe's properties to produce human persons, may emerge and

thereby a closer interaction – even integration.

3. *The End of Discovery* is physicist Russell Stannard's recent book (2010) in which he looks into what seems to him to be a major issue facing twenty-first century scientists – that fundamental science must have its limitations: the questions being asked in this century may "take us right up to the boundaries of the knowable" (Stannard 2010, p224). Amongst the many cosmic aspects where this notion is relevant, Stannard includes a number specific to human beings inhabiting a part, at least, of the known universe. Certainly consciousness is a problem "unlikely to be solved to everyone's satisfaction" (Stannard 2010, p12). Freewill and determinism present another much debated issue, raising the problem of the two being 'compatible concepts'. The very origin of humanity within the cosmos poses seemingly insoluble questions. Like Conway Morris and Alexander, he too follows the broad architecture of the universe from the Big Bang through the formation of galaxies to the emergence of humans, stressing the relevance of the *violence* of the former to the appearance of intelligent life: "a less violent Big Bang would result in no life" (Stannard 2010, pp19,33). This brings him to also refer to the anthropic principle, endorsing its pronouncements with the observation of the "self-ordering property of matter", without which "we would not be here" (Stannard 2010, pp114-115). He too sees here one of the mysteries of the fine tuning properties which have permitted the existence of all that science has observed. But what has not been observed has also to be considered – the possibility of extraterrestrial life. As far as the planets of our Solar system are concerned, he sees a possibility of some form of very primitive life, but not of intelligent life. But amongst the billions of galaxies each with billions of stars, there must be, he says, "many Earth like planets – planets where intelligent life could flourish" (Stannard 2010, p152). So strongly does he feel that this is a *possibility*, that he reckons that "we would be well to discard any thought that we are unique" (Stannard 2010, p52). Furthermore he sees, through the Human Genome Project's understanding of human DNA codes, that there looms the possibility of *diverted evolution*, new trends in genetic inheritance leading to enhanced intelligence of extraterrestrial humans (Stannard 2010, pp52-53). Problems arising from any encounter with beings with intelligence of perhaps a 'higher order', may seem to have no solution for the mind of present-day humans on planet Earth, and Stannard can offer no suggestion of enlightenment through looking into how the "human body has evolved over time from more primitive ancestors" (Stannard 2010, p113). Perhaps the lack of knowledge suggested here could be profitably aided by the thesis' recognition of the value of prehistoric archaeology in determining something of the

development of intelligent human life under the finely tuned conditions of the planet where it did in fact take place. In addition having discarded, as he suggests is necessary, any thought of the human species being unique, the concept of each human being as a *unique individual*, may throw light on what the nature of intelligence in unknown hominoids in other galaxies might be. By adding this concept of uniqueness to his list of 'mysteries', his belief in the limits of what is knowable may be affected and perhaps enhanced.

I think it is fitting to add a philosophical twenty-first century view, Enlightenment's philosophical science having sparked off the science/theology conflict which has dogged the steps of those who, over the centuries, tried to see human uniqueness as a unifying reality. Philosopher Mary Midgley's twenty-first century book - *The Solitary Self* (Midgley 2010) - has as its topic 'individualism'. Though taking many forms, individualism is, in her view, accepted as a main achievement of the Enlightenment and now "a guiding ideal for our age" (Midgley 2010, p1). With its basis of self-interest as the prime cause of human motivation, its essence is the egoism of each human individual to the extent of separating the person from other individuals and the natural world around them, in both outlook and behaviour. Associating this not only with atheism but with the fatalism that has developed from science's representation of humans as 'lumbering robots' ruled by the natural features of a genetic makeup, yet with the freedom unique to humans which, giving rise to a many-sided nature, amounts to conflict rather than harmony for the whole person (Midgley 2010, p143). For her, this is a drastic form of individualism and it is encumbered with a range of problems. Though looking at some of the thousand-and-one reasons why there can be no simple solutions (Midgley 2010, p139), her conclusion is that individualism – an exclusive kind of humanism – amounts to a depersonalizing of nature – the physical world being "fit only to be appropriated by us" (Midgley 2010, p143). If the damaging nature of these concepts to human life is to be confronted, "we surely need to rethink them" (Midgley 2010, p143).

Although Mary Midgley has taken a very different stance regarding human individuals from that which I have employed in the thesis, the central theme – the independence of human life - is a shared one, as is the search for meaning in the wider perspective of the world and beyond, through debate with other disciplines. However, her concept of the individual is as seen from the outside world inwards, to where egoism is epitomised in the competitive

solitary self, whose intelligence is reckoned to separate humanity from the rest of the natural world. The concept I have adopted is, by contrast, of the 'inner self' exhibiting the egoity of the unique individual, as understood through the biology of the human, recognised by the personal awareness of being 'I, myself' and of its giving rise to the egoism stimulated by and within society, through the culture that human intelligence has brought forth. Should this concept be thought worthy of a place in Midgley's proposed initiation of a 'rethink' on the role of individualism in the 'depersonalizing of nature', a fresh look at the solitary self would be advocated. This would, it may be argued, necessitate broadening the range of disciplines chosen to participate in the debate. By taking the perspective of archaeology into account in conjunction with biological science, the cultural development of humans through the evolutionary line of the succession of hominins, would be seen to enlighten the purely scientific scene. By returning to the role of philosophy jointly with theology, a wider and deeper significance would be given to the reality of the nature of human beings. Through identifying each solitary self as a unique human individual, a drawing back of the neo-Darwinian extremes of modern individualism towards the Enlightenment's integration of science with theology through philosophy augmented by archaeology, could be seen.

Reflections such as these, express the essence of the thesis – its purpose and design being to find a *new outlook* on human uniqueness, with the prospect of integration replacing conflict between Christian theology and biological science in the twenty-first century. The conclusion of the thesis, however, must consider the extent to which this new outlook is, in fact, new and whether, in reality, it can serve to achieve this aim. The element of 'newness' – having the status of originality – rests on three of the topics of the thesis. One is the application of cognitive aspects of prehistoric archaeology to both science and theology – to the reality of human behaviour beyond the remit of biological science and also to philosophical principles of the 'self' which lie outside the traditions of Christian doctrine. The second lies in the channelling of past efforts to eliminate causes of conflict between science and theology beyond the realms of collaboration, compatibility or agreeing to differ, to the possibility of integration, each acknowledging the need of the other's expertise. Thirdly, as has been stressed previously, acknowledging that the proposed 'route', by way of integration is not claimed as the *only* way for the disciplines to reduce the rift between them, but as a plausible and appropriate one, where biology

confronts issues of Christian belief. In pursuing these three 'new' aspects by way of presentation and discussion centred on selected 'figures' – appropriate, I have considered, where the individual person is of prime concern – a measure of reality has prevailed, which, in the past, has not always been the outcome of science - versus - theology debates. Reality, then, is what I reckon to be the nature of the achievement claimed for the thesis, its achievement being, I believe, a valid and credible proposition for the replacing of perpetual confrontation between science and theology with the stability of integration, for the twenty-first century.

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